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MACFORMAT

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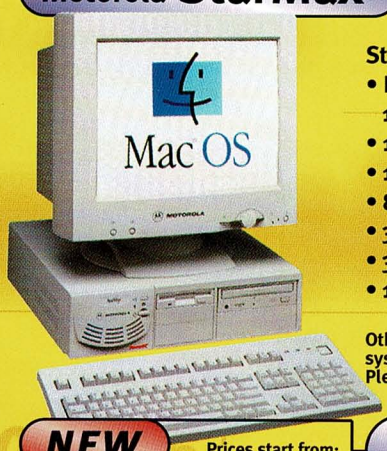

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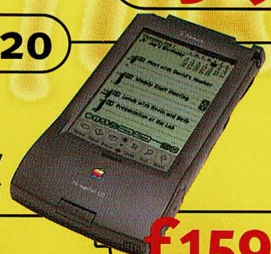

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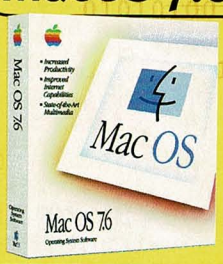

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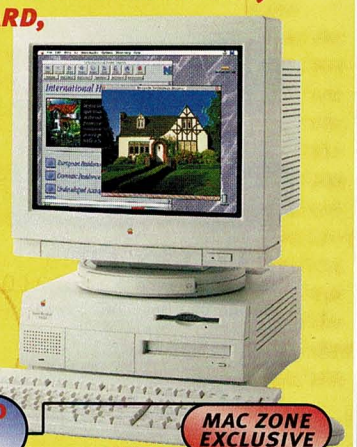

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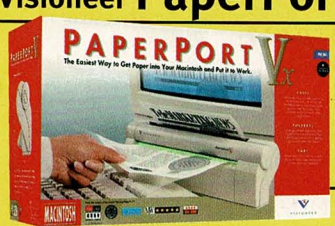

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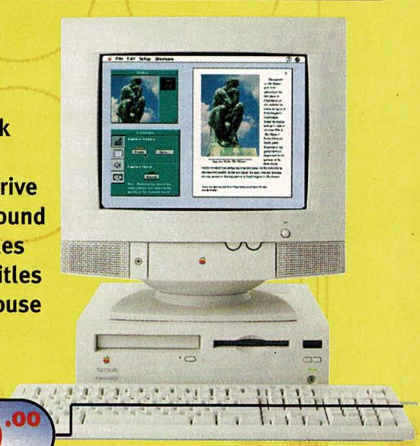

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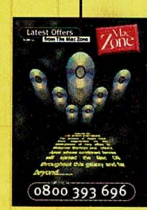

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MACFORMAT
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Win! Win! Win!

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ONE Technologies' 2.6Gb magneto-optical drive could solve all your storage problems. We've got one, worth £1,140, to be won, plus font collections for runners-up.

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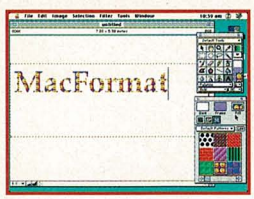

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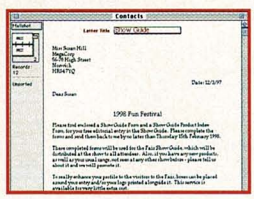

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Get your Mac ready for lift-off in four weeks' time.

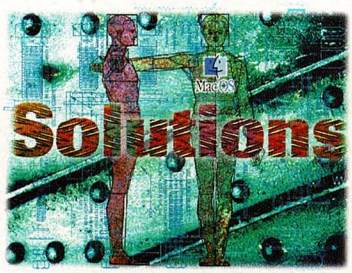
Get your maths to add up with our education software round-up: page 98

Buzz and beyond

Computer animation page 30

ON THE CD

A true 20th century artform, animation has come to rely on the computer. MacFormat looks at the best animation today, and surveys the essential software you need to produce top-level animation on your own Mac. We also show you the tricks of the trade with two in-depth guides to producing your own simple animated cartoons – with all the software you need on our Cover CD!



Solutions

Four new Mac-compatibles page 68

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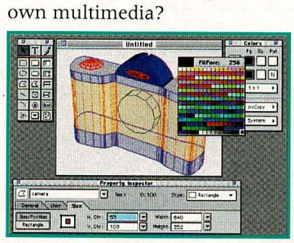
Can the new version of this authoring package make it easy to create your own multimedia?



LightWave 3D page 80

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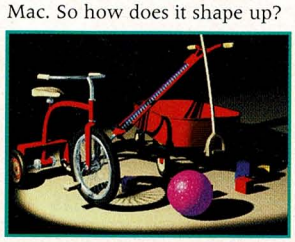
The software behind many of the finest film special effects arrives on the Mac. So how does it shape up?



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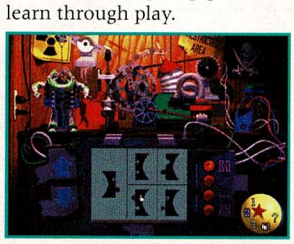

MacFormat Cover Discs

ON THE CD

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Your Cover CD-ROM 8

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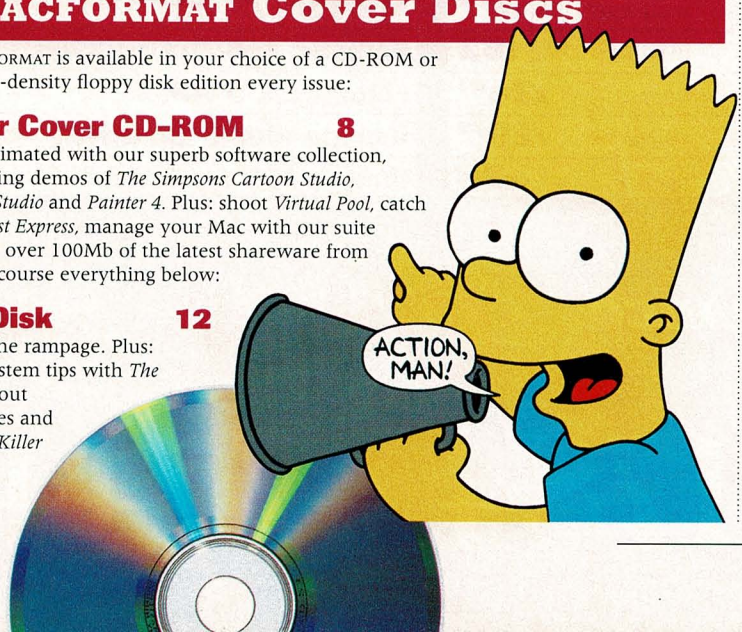
Your Cover Disk 12

Bill the Demon is on the rampage. Plus: discover essential System tips with *The InformInit* and weed out unwanted Preferences and Extensions with *PrefKiller* and *ExAminer*.



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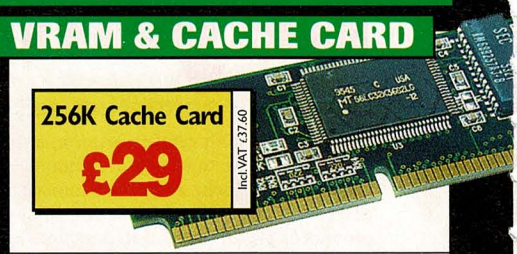

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Welcome to MACFORMAT

Everything you wanted to know about MACFORMAT, plus our favourite computer-related animations...

Meet the MF team

Richard Hill

Our Deputy Editor and news supremo happens to be a popular-culture junkie and comics fan as well, so if you ask him about animation you get a long list from Tex Avery to Toy Story. But the very best computer animation around at the moment, he reckons, is the intro to *Pandemonium* on his PlayStation. Did we mention he's a PlayStation fan too?

Lindsay Bruce

Our Technical Writer says his favourite thing about animation on the Mac "and all the lovely software coming out for that purpose is that diabolical work such as Rhubarb and Custard will no longer be aired on British TV. Instead we'll have Paddington vs Terminator. Or maybe I'm just getting a bit too excited about this new wave of 3D animation..."

Brian Smith

Our still-quite-new Disc Editor's degree included an element of multimedia, so he tends to enthuse about technical wizardry as much as general gorgeousness. He loved " that thing with scanned-in heads and 3D hair, and motion capture, and then at the end of it the illustrator comes on in person..." Anybody know what he's talking about?

Derek Smith

Our all-round Mac technical expert has simple tastes, as befits a small green stuffed dinosaur. He likes "*Reboot*. No, make that *Insectoids*. And that new Persil advert – it's just *so* cheesy. Oh, and anything by Pixar. Including Rhapsody. Probably."

Rod Lawton

MACFORMAT's productivity software specialist told us that what he *doesn't* like about computer animation is "that glossy, reflective, flawless surface syndrome. Never mind polygons, give us proper texture mapping," he says, "and *no* lens flares. Photographers have been trying to eliminate them for 100 years, and you have to go and put them in!"

Alex Summersby

Editor

There's a good rule of thumb to apply whenever you read about computers, and it's this: the emperor almost certainly has no clothes on.

Take this megahertz stuff. When you ask what it really *means*, it vanishes like the potentate's attire.

The truth is that clock speed is a reasonable measure for comparing processors *of the same type* – a 200MHz PowerPC 603e chip is indeed faster than a 150MHz 603e, and a computer built around the former should perform faster than one built around the latter. But so many other factors affect *actual* performance – the design of the motherboard and data bus, which System version you're running, and much more – that this measure *on its own* just isn't enough basis for comparison. In fact a 150MHz 604e chip could very likely outperform a 200MHz 603e, because the 604e chip is inherently more powerful.

Comparing computers only by clock speed is like trying to choose between cars on the basis of horsepower, or maybe how many RPM the engines rev at, regardless of gear ratios, weight or even whether they're diesel or petrol, let alone actual performance results.

Just as you'd consider all these and more if you were choosing between, say, a Ford Thrust and a Lambourghini Testosterone, you need to look at the whole *package* you're getting. Makers are increasingly offering complete *solutions*, as we see this issue, not just playing a numbers game invented by PC cloners desperate to distinguish one mediocre Pentium box from others. Macs are about much more than that, and always have been.

Alex

About MACFORMAT

Welcome to MACFORMAT, Britain's best selling Mac magazine. MF is for you, the person at a Mac keyboard. Every issue we bring you:

- **Tips, techniques and practical step-by-step tutorials** covering the whole range of Mac applications, to help you learn how to get more from your software.
- **Features** about exciting Mac developments and novel uses, accompanied by software on our Cover CD whenever possible, so you can discover what your machine can do and try things you mightn't have tried before.
- The latest Mac-related **news**, plus all you want to know about the wider issues, the people behind the headlines and the stories behind the stories.
- Authoritative, independent **reviews** of interesting and affordable products, with clear buying recommendations.
- **Cover Disks and CD-ROMs** with demos so you can try software for yourself before you buy, useful programs specially chosen to complement features in the magazine, selected shareware, games, readers' contributions and much more.

Whether you're a veteran or a novice, MACFORMAT will help you get more out of your Macintosh, whatever you use it for.

A word about prices...

We try to ensure that all prices quoted in editorial pages in MACFORMAT are accurate at the time of going to press, and they all *include* UK Value Added Tax at 17.5%. However, this may not necessarily be the case with prices appearing in advertisements, so we recommend that you always contact advertisers before ordering to confirm prices and availability.

We make every effort to verify all the information we publish, but products and prices do change. We always quote list prices (RRPs), but street prices vary. Shop around, and check with the supplier before buying to make sure that the product you're considering will meet your needs. MACFORMAT cannot accept responsibility for any errors or omissions or for any losses that may arise as a result, but it is our policy to correct any errors of fact whenever we possibly can.

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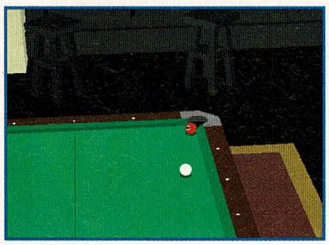
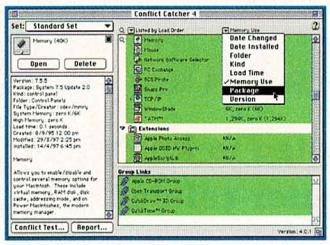
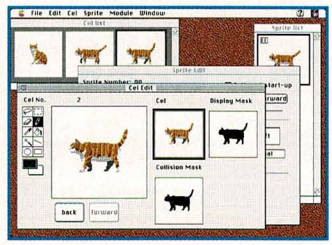


Virtual Pool

3D Ultra Pinball 2: Creep Night



Conflict Catcher 4.0



ScreenStudio

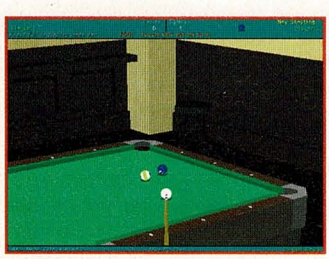
Your CD-ROM

Turn your Mac into a virtual pub with this issue's *Virtual Pool* and *3D Ultra Pinball 2: Creep Night* demos. All that's missing is the loud music and beer. "Ah well, you can't have everything," sighs Brian Smith...

Virtual Pool

What is it? Four-ball playable demo
Where you'll find it: Demos folder
Mac: PowerMac only
PowerMac: any
Requires: System 7.5.1, Sound Manager 3.1, 4Mb RAM (4.5Mb with Virtual Memory off), and Open Transport 1.1 for network play.

Virtual Pool is the best Mac pool simulation yet! Because you view all the action in 3D, the camera can fly around the table, giving you the best view of the proceedings.



Because the table is shown in 3D, you can pick the best viewpoint for your shot.

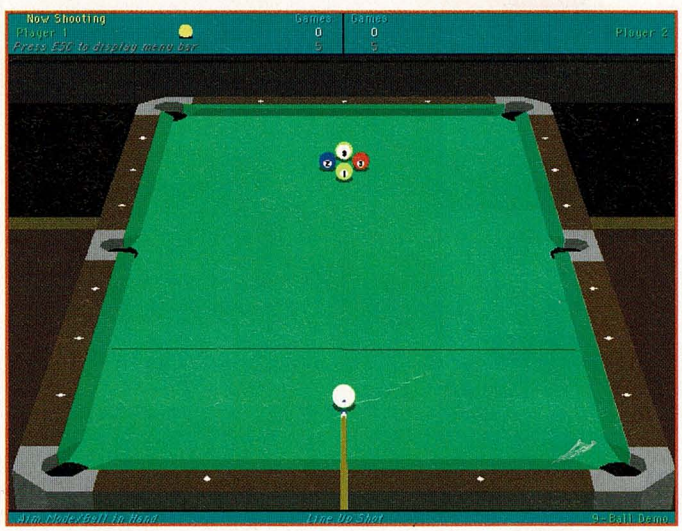
Whether you're lining up a cannon shot or making the break, it seems as if you're really there.

The balls react realistically when hit, so you can use effects such as back-spin to pull off tricky shots. You can even change the pool table's baize to the colour of your choice. All that's missing is your pint glass perched on the edge of the table and a smog of cigarette smoke clogging the air...

This is a two-player demo, so you can either take turns with a friend (using the same Mac) or link two Macs together via a network or modem. It's also limited to a four-ball game, but you can set it to play as many games per match as you want with the **New Game...** option in the **File** menu. There are many key controls you can use to make changes, from how much side you give a shot to which viewpoint the table is shown from.

The full version of *Virtual Pool* has additional game options – you can play eight-ball, nine-ball, straight pool and rotation games, plus you can play against up to nine computer players, of various skill levels. There is even a crash course available from "Machine Gun" Lou Butera. The complete UK version of *Virtual Pool* should be on sale soon. Watch for our review.

To get a list of controls, rules and troubleshooting help, go to the **Read Me – Virtual Pool Preview** file in the **Demos** folder.



A hush descends upon the room as the young pool hustler prepares to make the break...

To install

You can play *Virtual Pool* straight from the Cover CD. If you want to play via a network or modem, you need to copy **NetSprocketLib** to your **Extensions** folder.

Note: before playing the demo you must disable *RAM Doubler*, and if you use *Now Menus* to change the sound level, your Mac will crash.

Getting started

Welcome to the MACFORMAT 51 Cover CD. Here are some tips:

■ Some of the demos on the Cover CD require installation on your hard disk – they won't run direct from the CD. Many of these programs use an installer: once you've double-clicked on it, just follow the on-screen instructions and you should be fine. Even if there's no installer, it often helps to copy demos to your hard disk – at the very least they should run faster than from the CD!

■ The icons we use on the CD folders help to give it a friendly atmosphere, but they do slow it down. Install *CDIconKiller*, which is in the Resources folder on the CD, to speed things up.

■ If you have problems quitting any of the rolling demos on the CD, just press [command] Q and you should go back to the Finder. If this doesn't work, hit [command] [option] [escape] to Force Quit.

■ It couldn't be easier to install System Extensions and Control Panels – just drag them over your closed System Folder and your Mac puts them in the right place. Then you simply need to Restart.

■ Look for this icon throughout the issue – it will point you towards the CD contents that are connected with the feature or review you're reading.

ON THE CD

3D Ultra Pinball 2: Creep Night

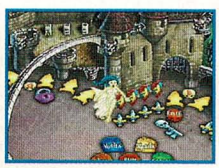
What is it? One table, five-minute time-limited playable demo
Where you'll find it: Demos folder
Mac: 68040, 33MHz or faster
PowerMac: any
Requires: 8Mb RAM, System 7.0, colour display, 2x speed CD-ROM drive, 6.5Mb hard disk space.

This spookily titled follow-up to *3D Ultra Pinball* is a faithful reproduction of real pinball with a few added extras. The Castle table available in the demo fits the name well, with ghosts and ghouls making frequent appearances in the five bonus games. If you've ever wanted to go bowling with a graveyard full of zombies for the pins, now's your chance!

The controls are straightforward, with **[control]** for the left flipper and **[shift]** for the right, **[down arrow]** to release a new ball and **[spacebar]** to nudge. However, the real fun in playing pinball is trying to discover all the hidden bonuses so you can rack up a really massive high score.

The full game includes three standard tables, a full digital soundtrack and loads of hidden sub-games. If you're into flashing lights, annoying jingles and amassing high scores, then you'll love this.

***3D Ultra Pinball 2: Creep Night:* it's just like real pinball, but with ghosts and ghouls!**



There are five bonus games hidden in the Castle table in this demo, including "The Magic Goblins Challenge" (above left), "The Wraith Challenge" (above middle) and "The Graveyard" (above right).

To install

Double-click on the **Creep Night Demo Installer** and follow the on-screen prompts.

Conflict Catcher 4

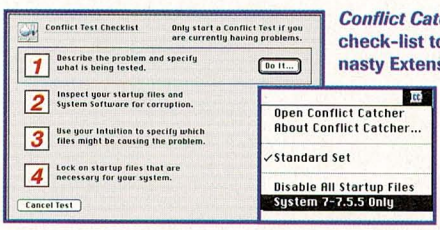
What is it? Fully-working seven-day time-limited demo
Where you'll find it: Demos folder
Mac: 68000
PowerMac: any
Requires: System 7.0, 1.3Mb of hard disk space.

It can be difficult to discover what's causing an Extension conflict. The culprit is usually the newest Extension you've added, but when program installers put Extensions and Control Panels into your System Folder without even asking, it's easy to miss them.

Conflict Catcher is the number one Extension conflict eliminator, and it's packed with useful features. For example, just type the first few letters of an Extension's name, and *Conflict Catcher* will display useful information about it, often including a Web address from where the latest version can be downloaded.

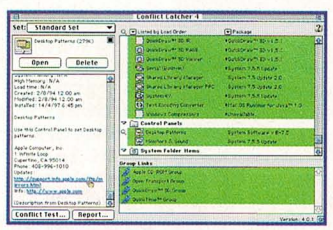
Using *Conflict Catcher's* menu, you can save and quickly install sets of enabled Extensions and Control Panels, although you'll need to restart your Mac before the changes take effect. You can list Extensions using different criteria, including how long they take to load, how much RAM they take up, and what family of Extensions they belong to.

Conflict Catcher supports Balloon Help and has a **Conflict Catcher Help** option in the **Help** menu, which leads you through the delicate process of resolving an Extension conflict.


Conflict Test Checklist
Only start a Conflict Test if you are currently having problems.
1 Describe the problem and specify what is being tested.
Do It...
2 Inspect your startup files and System Software for corruption.
3 Use your intuition to specify which files might be causing the problem.
4 Lock on startup files that are necessary for your system.
Cancel Test
Open Conflict Catcher
About Conflict Catcher...
✓Standard Set
Disable All Startup Files
System 7-7.5.5 Only

***Conflict Catcher 4* provides a handy check-list to help diagnose those nasty Extension conflicts.**

After installation, a new menu is added in the Finder, which enables you to easily select predefined sets of Extensions and Control Panels.



***Conflict Catcher 4* has a database of the most common Extensions.**

To install

Double-click on the **Conflict Catcher Installer** and follow the on-screen instructions. If you have a previous version of *Conflict Catcher* installed, your Preferences files will be converted. You should disable all your Extensions before installation by holding down **[shift]** while your Mac starts up, until you see the message "Welcome to Macintosh. Extensions off." After installation you will need to restart your Mac. For more details on this and using *Conflict Catcher*, see the **Conflict Catcher 4 Demo ReadMe** file.

See our review of *Conflict Catcher 4* on page 88. ➤

CD index

Find exactly what you want using our folder-by-folder guide to this issue's MACFORMAT Cover CD.

Demos
Bumbler ■ Conflict Catcher 4 ■ Last Express Preview ■ The Logical Journey of the Zoombinis ■ SuperCard 2.5 Trial Version ■ 3D Ultra Pinball 2: Creep Night ■ Virtual Pool

Animation
ElectricImage Demo ■ Morph 2.5 Demo ■ Painter 4.0 demo ■ PhotoDisc Animation Series ■ PROmotion preview ■ ScreenStudio demo ■ Simpsons Cartoon Studio Demo ■ The Animation Stand Demo
See cover feature, page 30

How-to's
Sample files and utilities to help you follow our step-by-step tutorials. ■ FileMaker Pro sample files (see the full how-to on page 56) ■ Handy utilities – see MacAnswers on page 60: HDT 2.0 & 2.1 > 2.0.6 Updater ■ PowerPC Interrupt Extension ■ System Picker ■ TechTool v1.13

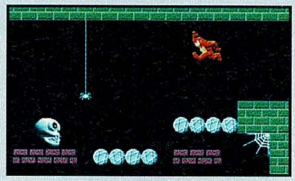
Jonni Starr Episode 6
The adventures of our SF hero Jonni Starr continue. Check out page 46 to see how it's done.

MACFORMAT Floppy
Bill the Demon ■ Colloque ■ ExAminer 1.4 ■ Finder Options ■ PrefKiller 1.0 ■ The InformInit 1.3

Readers' Corner
More great artwork and contributions from our readers.

Resources
Acrobat Reader 3.0 ■ CDIconKiller 1.3.3 ■ CFM-68K 4.0 folder ■ Disinfectant ■ DOCMaker SW v4.7 ■ DropStuff w/EE 4.0 ■ Graphic-Converter 2.6 ■ MACFORMAT CD Index ■ NewsWatcher ■ QuickTime 2.5 ■ ResEdit ■ ShrinkWrap 2.1 ■ SoftwareFPU 3.04 ■ Sound Manager 3.2 ■ Sound Manager 3.2 ■ StuffIt Expander 4.0.1 ■ System 7.5 Update 2.0 ■ System 7.5.5 Update

Shareware Central
The programs reviewed this issue, starting on page 110:
AppHider 1.3 ■ Bubble Trouble ■ CADintosh 2.6 ■ Consecutive Four 1.0 ■ Data Ratchet 1.0 ■ Days To Go 2.0.1 ■ Dot 2 • ■ FeatherGIF 1.7 ■ Kaleidoscope 1.0.1 ■ MacXT 1.0 ■ Monkey Shines ■ Y-Not



Our shareware star this month – *Monkey Shines.*

Shareware Plus
Over 100Mb of the latest shareware plucked from the Internet and arranged into handy categories.

Get moving

ScreenStudio
What is it? Save-disabled demo
Where you'll find it: Animation folder
Mac: 68030, 20MHz or faster
PowerMac: any
Requires: 4Mb RAM, 256-colour display, System 7.1.

Originally developed in Japan, *ScreenStudio* has now been localised by a company called Feral. Available in the UK as a Mac-only program, *ScreenStudio* enables you to design animations which you can turn into either stand-alone programs or *After Dark* screensaver modules. This demo enables you to preview animations but not save them.

The animation process is fairly simple. First you import or create a series of images in the **Cel List** window, and these are then combined to form an animation loop called a sprite. You then use the **Sprite Edit** window to define how the sprite will act in a given situation. For example, if you wanted to make an animated cat walk from left to right across your screen, you'd set it to appear at a random position on the left side of the screen when the animation begins and then move right. When it reaches the right-hand side, you could make it walk off screen or turn around and go the other way.

While the sprite moves across the screen, it animates through the predefined series of images and can even play a sound. You can build up very complex animations in this way, and it's even possible to make sprites interact with each other by using collision masks to see when they overlap.

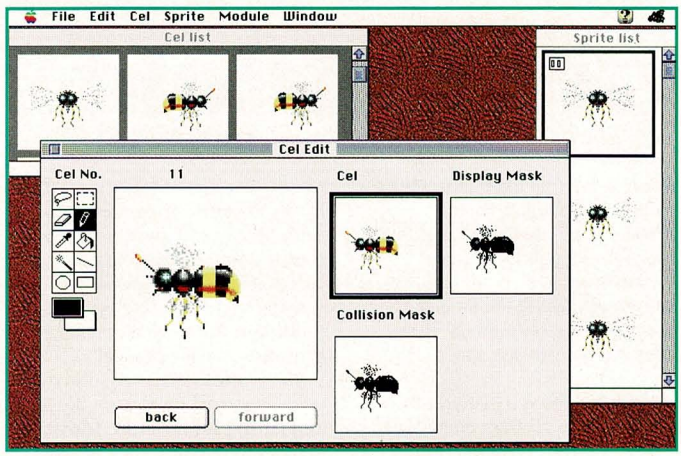
Some sample *After Dark* modules are provided, along with a tutorial to lead you through the process of making a simple animation. For more information see the **ReadMe** file in the **ScreenStudio** folder. And for more on computer animation, see our feature on page 30!

To install

ScreenStudio can run straight from the Cover CD.

Use *ScreenStudio* and you too can make bizarre *After Dark* modules.

Below: Three sprites taken from the sample *After Dark* modules supplied with the demo.



***ScreenStudio* has a very simple-to-use interface.**

Also...

The Animation Stand
A professional cel animation package for you to try.

ElectricImage Demo
A powerful 3D animation application.

Morph 2.5 Demo
Create animations by morphing between still images.

Painter 4.0 Demo
Follow our step-by-step *Painter* animation how-to on page 44.

PhotoDisc Animation Series
A sneaky peak at the *PhotoDisc Animation Series* with some animated GIF and Shockwave samples.

PROmotion Preview
A preview of the new animation creation application.

Simpsons Cartoon Studio Demo
Make your own animated *Simpsons* cartoons. See review, page 40.

The preview of *PROmotion* explains exactly how to create an animation.

Direct Bart in your own *Simpsons* episode. Cool, man!

Got a problem?

Before installing the software from our Cover CD or Floppy Disk, we recommend you always back up any important work on your hard disk. This precaution will avoid problems if it turns out that a program isn't compatible with your particular Mac set-up.

We make every effort to check our Cover Disks for compatibility and viruses, but the information here is intended as a guide only, and MACFORMAT cannot be held responsible for any damage to data, any inability to use this software or any resulting losses. So please, do make sure you back up first.

If your CD-ROM or disk is defective, return it to us via one of the addresses on the right and we will replace it. Please make sure you have followed the installation procedures described in these pages correctly, to ensure that there is a physical problem with the disk itself. Otherwise, the replacement will give you exactly the same problem!

Enclose a self-addressed padded envelope (but we'll pay return postage) with the disk or CD, and a description of the fault. Please do not return disks or CDs to the editorial office; we don't hold any stocks of them and can only refer you to the appropriate address below.

Return faulty CD-ROMs to:
MACFORMAT CD returns
PC Wise Ltd, Dowlais Top Business Park,
Dowlais, Merthyr Tydfil,
Mid Glamorgan,
South Wales C48 2YY.

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Bradford BD4 7BH.

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We're pleased to bring you 100 more selected images from the *IMSI MasterClips 101,000 Image Collection*. The images are supplied in EPS and TIFF formats and are arranged into eight handy categories: Animals, Business and Occupations, Children, Couples, Recreation, Regional, Sport, and Symbols.

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Also on the CD...

Logical Journey of The Zoombinis

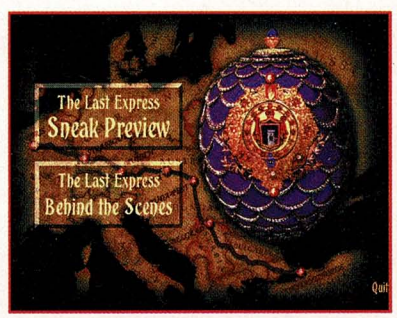
Try the Mudball Wall puzzle from Brøderbund's educational multimedia title.

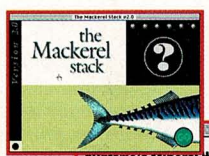
Last Express Preview

Your chance to preview the soon-to-be-released detective adventure and discover how it was made. The demo player, like the game itself, is PowerMac-only, but if you own a 68K Mac you can take a sneak peek at the movies **Making of.mov** and **Sneak Preview.mov** in the **Movie** folder using MoviePlayer.

SuperCard Trial Version

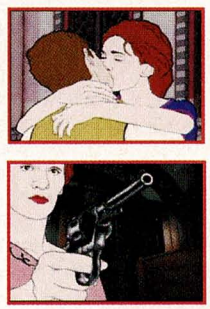
This is the limited, trial version of *SuperCard 2.5*, which includes full documentation and a tutorial. You can see a full review of the new *SuperCard 3* in this issue on page 84. Some of the added features in version 3 are a **Project Editor**, a useful editing tool, and a freeware plug-in called *Roadster*, which plays *SuperCard* stacks over the Internet.





With *SuperCard* you can create professional-looking multimedia, like The Mackerel Stack – what a good catch.

Can you solve the logical puzzle of the Mudball Wall?

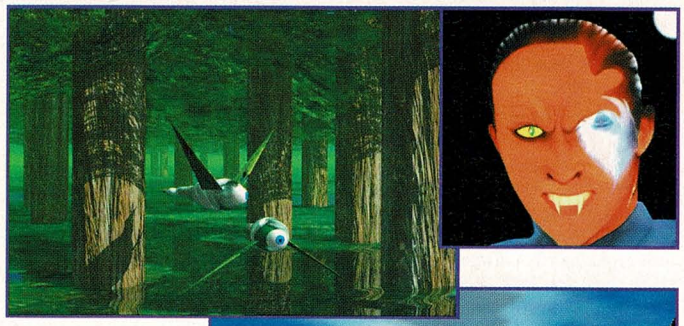


The Last Express Preview offers a glimpse of the soon to be released detective adventure. Where's Hercule Poirot when you need him?

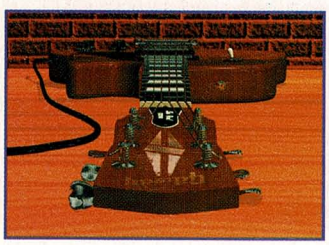
Readers' corner

This issue our Readers' Corner features stunning artwork from Jan Melin, Andy Hendry and Marcos T Pinheiro, who has sent in a collection of images and three movies created in *Photoshop*, *Bryce* and *Infini-D*. Other contributions include a *Marathon Infinity* level from Christian Duerden and an interactive CV by Mark Kenny.

Have you done some work that you would like to show to the rest of the world? Send your contributions to Brian Smith, Disc Editor, MACFORMAT, 30 Monmouth Street, Bath BA1 2BW.



Top Right: "Sam After Dark" by Marcos T Pinheiro. Top Left: "Alien Forest" by Henry Milton. Right: "Beach" by Nick Milton.



Left: A Gibson Les Paul guitar created in *Infini-D* by Jan Melin.

On The Floppy

This issue, to accompany our free System Folder guide book, we have *The InformInit*, *PrefKiller* and *ExAminer* on the floppy. They're all you need to prune the unneeded Extensions, Control Panels and Preferences files from your System Folder.

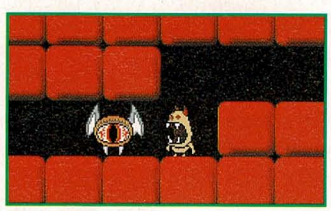
There is also a great arcade game, *Bill the Demon*, where you play an anti-hero on a quest to secure your street-cred. All these goodies are on the CD too, in the **Floppy** folder.

Bill The Demon

What is it? Shareware game
Mac: any
PowerMac: any
Requires: any 256-colour Mac.

Bill has a problem: he just can't compete with Mephistopheles and Beelzebub in the name department. So, to increase his street-cred, he's decided to get the Devil's autograph! To do this you have to tramp through the various circles of Hell, and to keep Bill's strength up you'll must eat the souls you find dotted about. When Bill has enough strength, he can defend himself against the minions of Hell with a quite literally stunning scream.

Disclaimer: MACFORMAT in no way endorses the lifestyle of a demon from the first circle of Hell and cannot be held liable for any injuries either physical or spiritual resulting from attempts to emulate Bill the Demon.



Bill takes a very fortunate yawn and lives to shout another day!

The InformInit 1.3

What is it? Shareware guide to the System Folder
Mac: any
PowerMac: any
Requires: any Mac.

One of the few problems with using a Mac is managing all the Extensions, Control Panels and Preferences files that programs install. Even a newly installed System is likely to have unwanted components. *The InformInit* by Dan Frakes tells you exactly what each one does, so you can reduce the clutter and avoid Extension conflicts.

All the Apple System components and many third-party ones are covered, and it even covers groups of System components like QuickTime and Open Transport. We based much of this issue's free book on *The InformInit*, and it includes may extra tips and bits of information that we couldn't squeeze into the book, so it is well worth a look.

The InformInit is shareware, so please support the author by paying the registration fee – after all, *The InformInit* is the only place where you can get all this information on your System Folder. Full details on how to register are included in *The InformInit* – with your credit card, it's as easy as double-clicking on the **Register** icon and typing in some details. Even easier, you can visit the on-line registration page at **http://order.kagi com/?DF**.

The InformInit 1.3 covers the Mac OS up to 7.5.5. Dan Frakes is working on a version covering System 7.6.1, and registered users will be the first to hear when it is ready.

ExAminer 1.4

What is it? Shareware utility
Mac: any
PowerMac: any
Requires: System 7.1

Once you've discovered what your Extensions do, you'll want to remove the unnecessary ones. *ExAminer* helps you do this in a similar way to Apple's **Extensions Manager** Control Panel. Unused System elements are moved to folders with a "Disabled" suffix, so you can reinstall them later at any time. You can even set up different sets of System elements which can be installed with a single command.

Plus

- **PrefKiller 1.0.** Clean out old and unused Preferences files with this handy utility. It will only work if copied to the hard disk containing your System Folder.
- **Colloque.** A clock that displays the time in plain English.
- **Finder Options.** Activate the hidden features in the Mac OS 7.5 Finder, like pressing **[command] [delete]** to move files into the **Wastebasket** and others. **MF**

How to use your disk

High density floppy disks normally contain up to 1.4Mb of software, but so that we can bring you as many useful programs as possible, we use a compression utility to fit more on. This means you need to decompress the software before using our disk; this issue you'll need 3Mb of hard disk space.

We also recommend that you always make a back-up of the MACFORMAT Cover Disk, just in case anything goes wrong.

To decompress the Cover Disk contents, open the MacFormat 51 folder on your hard disk and double-click on the MacFormat 51 icon. You'll see a screen telling you about the compression utility we've used. Click Continue when you're ready.

A dialogue box prompts you to decide where to save the software. Choose the place on your hard disk where you want everything stored, and click Save to get hold of this issue's programs.

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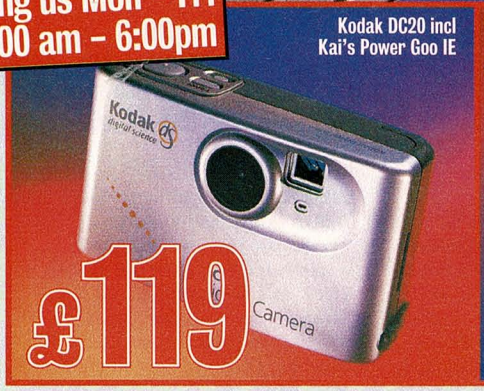

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ART CRASH, Germany

MetaTools attempts to dominate 3D graphics ■ Apple under takeover threat ■ QuickTime 3 and FireWire unveiled ■ News Editor: Richard Hill.

MACFORMAT NEWS

MetaTools aims for

The graphics company MetaTools has bought rival firm Specular, in continuance of its drive to revolutionise 3D graphics. MetaTools plans to add Specular's software and technologies to its own, predominantly through a research project that will bring you real-time 3D animation.

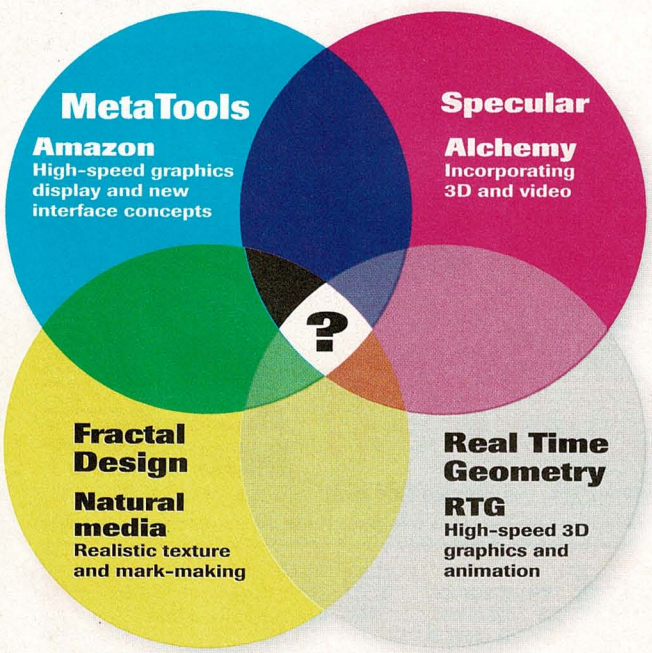
Specular is the company behind *Infini-D*, a popular 3D suite that enables you to build models and scenes, render textures and lighting onto them and produce high-quality animations. We previewed the new version 4.0 last issue, and Specular has gone ahead with the launch despite MetaTools' corporate swoop. *Infini-D 4.0* includes brand new rendering technology that is capable of producing more sophisticated results quickly, and enables you to blend 3D animation and video together seamlessly.

The acquisition of Specular follows the recent announcement of a merger between MetaTools and Fractal Design (see News in MACFORMAT 49). The pair is set to create a new company, of which Specular will become part. In addition to this, Fractal Design bought the 3D firm Ray Dream last year. Once the dust finally settles on this sequence of purchases and mergers, the new firm – still to be named – will be able to offer a range of software including *Bryce, Kai's Power Tools, Painter, Infini-D, Expression* and *Ray Dream Studio*.

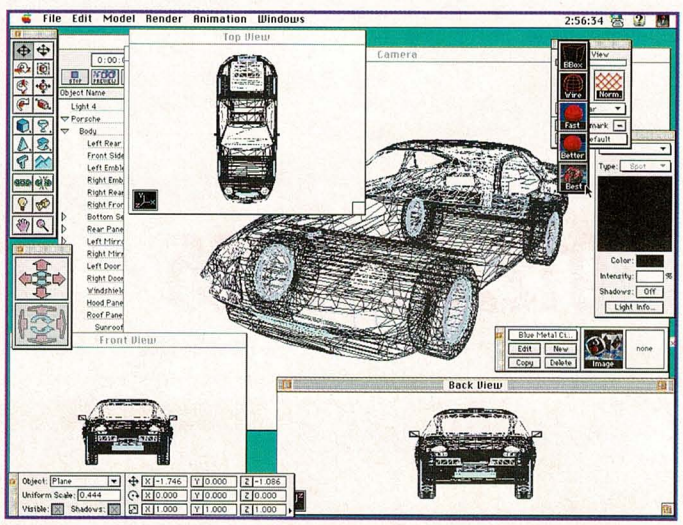
Specular's software engineering team will move from the firm's headquarters to MetaTools' Real Time Geometry research facility in Princeton, New Jersey. RTG is yet another firm bought up by MetaTools recently, and it has been working on innovative new 3D software technology. It has devised a new way for computers to perform 3D calculations, which promise to enable Macs and other machines to display and animate 3D graphics faster than through any other existing method.

The system, also called Real Time Geometry, works out how many triangles are needed to draw a detailed image object on-screen. A vase in the distance might need just five or six polygons to describe its shape, for example, but thousands of polygons are needed to show it close-up. As the object moves closer, RTG calculates the extra polygons needed to maintain the level of detail. When you zoom in

When titans merge



MetaTools has engineered the coming together of exciting technologies with the potential to transform the 3D graphics scene. We won't know if the combined resources of these four firms fulfil their promise until late this year.



***Infini-D* is the main reason behind MetaTools' purchase of Specular. The company intends to use Specular's technology as its flagship as it launches a entirely new way of producing 3D graphics.**

New Macs offer fast 3D

Underlining the growing importance of 3D graphics, Apple's newest set of PowerMacs features built-in 3D graphics acceleration, boosting the speed of your 3D work and games-playing by up to 900%.

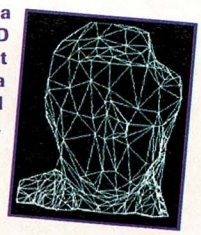
The PowerMac 5500 and 6500 (in the same case as the 6400 shown here) each feature a card from 3D specialist ATI, which speeds up any graphics produced using Apple's QuickDraw 3D display technology. Games like Gremlin's *Actua Soccer*, included with the new Macs, will display fast, detailed graphics with the card. See What's New on page 20 for full details of the range.

3D crown

on a 3D scene, it performs the calculations and redraws the model so quickly that it seems as if the object is moving smoothly towards you.

The company is employing the same mathematical approach in its work on a new 3D camera, which can create a 3D map of an object's surface – even a person's face – in seconds. RTG's ideas are the reason behind MetaTools' flurry of corporate activity: the powerful *Infini-D* will be the flagship as MetaTools attempts to establish Real Time Geometry as a cornerstone of the 3D graphics market.

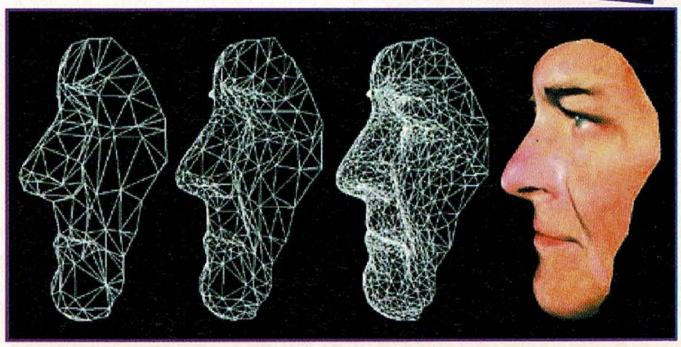
MetaTools will also be able to combine RTG with Fractal Design's well-known natural media effects, used in programs like *Painter* and *Detailer*, but it hasn't announced any RTG products yet.



This is how a normal 3D program might construct a small model of a head...

...But what if you needed to make it bigger? With RTG, your Mac can recalculate how many polygons it needs for the new size...

...And it will keep changing the amount of detail as fast as you can move the model.



RTG's use of advenced mathematics means you can create a single 3D model, then use it close up or far away – the detail changes to match.

Maverick threatens Apple takeover

The drawn-out saga of Apple's fightback from severe financial difficulties has taken a new twist, with the head of a rival firm openly mulling over making a bid for the company. Apple's announcement of heavy losses for the first three months of the year added to its bad news, with the $708 million (£429 million) deficit ranking as the second-largest in the firm's 21 years of business.

In interviews with the *San Jose Mercury News* and the Japanese paper *Nihon Kezai Shimbun* (also known simply as *Nikkei*), Oracle's Chief Executive Officer Larry Ellison raised the possibility of leading an independent consortium to make a bid to buy Apple.

Ellison, who criticised Apple's recent decisions, believes the new owners should sack current boss Gil Amelio. "Apple is in desperate need of all-new management and leadership," Ellison told the *Mercury News*. He said he was going public with his ideas to gauge reaction from the industry and the public, before deciding whether to press ahead with a bid. He added that he was acting independently of Oracle – although he still used Oracle's press agency and an Oracle e-mail address (**savapple@us.oracle.com**) as part of his publicity drive.

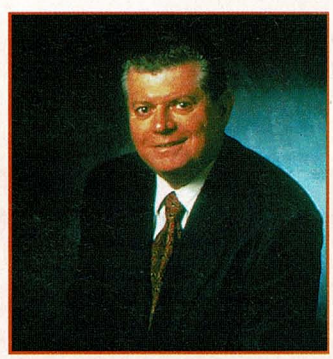
Ellison wants to find a company capable of mass-manufacturing Network Computers, cheap and basic machines designed to work through the Internet. "If the acquisition succeeds we can position Apple as our production base for the NC," he told the *Nikkei*.

Ellison said he would also make himself and Apple co-founder Steve Jobs, currently an independent advisor to Apple, part of the Apple board. "Within several weeks the final decision will be made and I think there is a very high possibility the acquisition will succeed."

Amelio's blunt response was to label Ellison's proposals as "nonsense". "Steve has very much been part of all the decisions we've made in the last few months. He has told me on several occasions when this sort of rumour has surfaced that there is nothing going on, and I believe him."

It's impossible to tell whether Ellison is dead serious about mounting a bid, or if he's engaging in a kind of Fantasy Football for billionaires. But the Silicon Valley region, where Apple and many other computer firms are based, is buzzing with theories and counter-theories over this new chapter of the Apple soap opera.

As Ellison was going public with his ideas, for example, a new figure entered the story, buying 5% of Apple stock – worth around $115 million – in just a few days. Prince Alwaleed Bin Talal Bin Abdulaziz Al Saud is now the second-largest shareholder in Apple (after American Express). The Saudi prince has a reputation for buying shares in a company he feels is due for a strong revival, making him millions of dollars in profit within months. But it's possible his intention here is to support Ellison, whom he described as a "good friend".



Gil Amelio faces sustained pressure as Apple continues to lose money.

Apple loss

Amelio is under further pressure after announcing Apple's $708 million loss. The figure includes $375 million to pay for Apple's purchase of NeXT Software (see News, MACFORMAT 47) and $155 million to finance continuing staff layoffs. But Apple still lost $186 million in its core business of selling Macs. (The $8 million disparity in the overall figures is because of interest payments Apple earned.) Amelio said the situation would now improve as sales of PowerMacs and PowerBooks developed over the next few months. "I feel very good," he commented. "With this behind us we can get down to making great products."

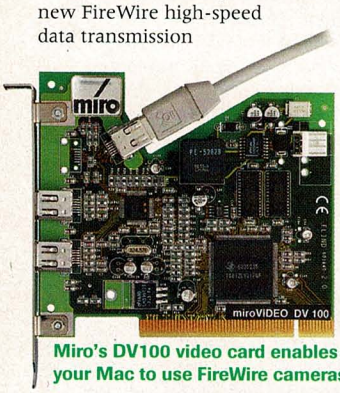
Mac OS adds pro video abilities

Sony will soon be joined by other firms offering FireWire video cameras.

Two imminent changes to the Mac OS will improve your Mac's ability to use video to the highest standards demanded by professionals, opening new possibilities in creating digital video quickly and cheaply. The changes could mean that video production becomes as ubiquitous as desktop publishing.

Apple unveiled the latest version of its video playback system QuickTime, along with its plans for its new FireWire high-speed data transmission system, at the National Association of Broadcasters show in Las Vegas. Traditionally a venue for TV production companies, NAB is seeing more activity from computer firms, as changes to video and the Internet promise the arrival of a merger between TV and the computer.

New digital TVs, set to appear in 1998, will be able to receive hundreds of new channels, many of which could be able to mix conventional programmes and interactive computer-based material. (In the UK, the BBC and Sky are planning their own digital channels already.)



Miro's DV100 video card enables your Mac to use FireWire cameras.

QuickTime 3.0

The new version of QuickTime, set to appear this summer, will help producers easily create material that can be used both on TV and on your Mac. QuickTime 3.0 incorporates all the major video and audio formats used in the broadcast and computing industries, including the new DVCam format used in digital video cameras. You'll be able to bring in video footage from any source and edit your material together, then output it ready for any medium.

Because of the way these formats are built into QuickTime 3.0, you'll also be able to use new formats like DVCam in your existing video editing and multimedia authoring programs, simply by installing the new QuickTime.

Apple is also adding a set of special effect descriptions to QuickTime. This means you can expect transition effects like fades and wipes, for example, to behave consistently even if you use several programs to edit your video clips.

FireWire

The Mac is now the first and only personal computer able to work with the new FireWire system, which enables devices connected together to exchange information at high speed. Apple has released an Extension which enables your Mac to recognise FireWire devices as you plug them in.

Apple sees FireWire as a replacement for SCSI, the system your Mac uses to exchange information with hard drives, CD-ROM drives and other devices. With current transfer speeds of up to 25Mb a second, FireWire is already over five times faster than SCSI, and technology improvements will soon enable FireWire to transfer data at up to 50Mb a second.

FireWire Video producers can now use a combination of Mac and digital video camera to film, transfer and edit a video sequence much faster than was possible before. Until firms start producing Mac-compatibles with built-in FireWire connections (probably in 1998), you'll also need to buy a FireWire card to accept your camera. See What's New, starting on page 20, for an example of Miro's FireWire video card.

The FireWire Extension works with Mac OS 7.6 and will be part of Mac OS 8, the next major Mac OS upgrade scheduled for July.

News in brief

ThinkFish adds style to 3D

A deal between Apple and graphics firm ThinkFish Productions will soon enable you to add a touch of panache to your 3D work. Apple's QuickDraw 3D will soon include LiveStyles, a ThinkFish technology that can depict 3D models in various styles, from fine art to cartooning. Each of the many programs that can now use QuickDraw 3D will enable you to create more impressionistic models and animations. You'll also be able to exchange models with others without losing any details.

Fractal Design, well known for its natural media graphics software, has also licensed LiveStyles, so you can expect to see it appear in future versions of programs like *Detailer*.

The LiveStyles plug-in for QuickDraw 3D will appear this summer, and will be included as part of the Mac OS from then on. See the Web site http://www.thinkfish.com/ for more details.

Firms agree on DVD

The companies behind the Digital Versatile Disc (DVD) design have formally agreed to license the technology to other firms. The announcement means that you'll definitely avoid a repeat of the video tape confusion of the 1980s, when customers had to choose between rivals VHS and Betamax without being able to predict which format would prove more popular.

ThinkFish's extension to QuickDraw 3D will enable you to show any model in many styles.

All the DVD players that go on sale (starting this year) will be able to play the same discs, giving you the widest possible choice. DVD is a high-capacity format capable of storing entire movies on a single disc; publishers are also planning DVD-ROMs for computers like the Mac.

7.6.1 update: as good as it sounds?

A new Mac OS upgrade from Apple adds several refinements to the current Mac OS, 7.6. *Mac OS 7.6.1 Update*, Apple says, eliminates most of the Type 11 errors PowerMac owners may have seen in the past year. Rather than disappearing completely, though, the errors are now correctly described as Type 1 or Type 2 errors.

Mac OS 7.6.1 offers a corrected version of the previously unstable *CFM-68K Runtime Enabler*, a PowerMac software decoder that 68K (pre-PowerMac) Macs had to have to use some programs, including *Apple Media Tool* and *PageStream SE* (included with our MACFORMAT 49 Cover CDs). The new *Runtime Enabler* avoids the small possibility of damaging data on your hard drive which existed if you used the previous version.

***Mac OS Update 7.6.1* is available for free from the Web site http://www.info.apple.com/, but will work only on Macs running the American Mac OS at present. Expect a UK version to appear on the Net before the end of June. You should also bear in mind that despite its status as a bug-fixing upgrade, the *Update* introduces a few bugs of its own. Some 5400 and 6400 Performas will print slowly with 7.6.1, for example, while the preset configurations in the 7.6.1 Extensions Manager leave printing and the Monitors Control Panel switched off. If you plan to update to Mac OS 7.6.1, make sure you look over the Read Me file first. MF**

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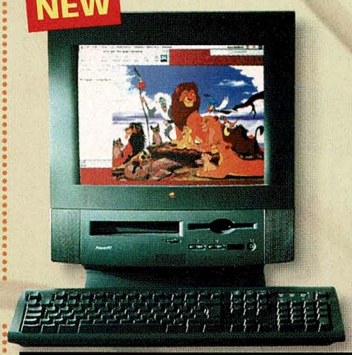

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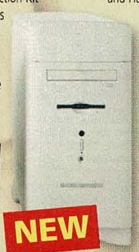

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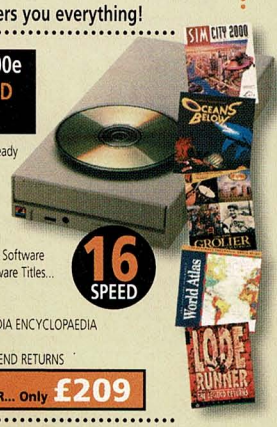

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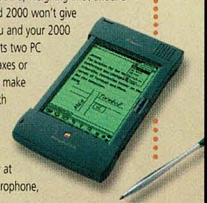
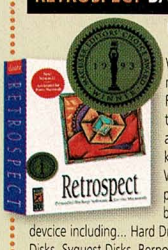
With the brand new Apple **MessagePad 2000** you can use those essential business applications even when you're away from the office. And, weighing in at under a pound and a half (0.64Kg), the Newton MessagePad 2000 won't give you a hernia either! When you are on the move, you and your 2000 can stay in touch. Simply slip a modem into one of its two PC Card Slots and you're ready to send/receive e-mail/faxes or connect to the Internet or an Intranet. You can even make those connections using your GSM Mobile Phone with the optional wireless data card. In terms of speed, the new 2000 is up to **TEN TIMES FASTER** than any previous model and also has more memory. Its backlit screen is larger and features 16 levels of grey at 100 dpi, there is an internal speaker, an internal microphone, software for connecting to both Mac and PC and a remarkable 24 HOURS OF CONTINUOUS BATTERY LIFE. Information at your fingertips, wherever you are, is here now with options for Mobile Phone Connection, Modem, Keyboard and MORE!



Newton Centre

Remember GH is your authorised NEWTON CENTRE

RETROSPECT BACKUP SOFTWARE



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With RETROSPECT, you can perform automatic, unattended backups to almost any storage devcice including... Hard Drives, JAZ Disks, ZIP Disks, EZ Disks, Syquest Disks, Bernoulli, Opticals and more!
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Use any attribute to select files and/or folders, including Date, Colour, Size, Name, Type, Label and/or owner. You can even request timed/scheduled backups which will work automatically! Fully featured security options will protect your data across a network to protect against snooping with password protection etc.

GH LIMITED OFFER ONLY... £69
Normal Retrospect Price - £179!

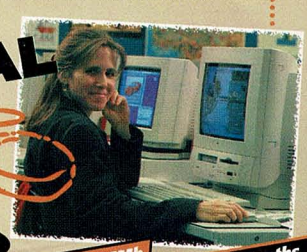
PERFECT PRINTER OFFER FROM GH

StyleWriter 2500

Claim a **FREE** Apple Colour PhotoGrade Print Kit Voucher worth £47 when you buy an Apple Colour StyleWriter 2500 from GH before 31st July 1997! Then you'll be able to produce high quality PHOTO REALISTIC images from YOUR Mac and new 2500 printer!

HURRY! Voucher offer must end 31:7:97)

SPECIAL GH limited offers



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- Thinkin' Things 2 • SuperMaze Wars • MacGallery
- Millie's Math House • HyperCard Player • Spin Doctor
- System Software ALL PRE-INSTALLED ON HD

PLUS on CD ROM...

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- Daedalus Encounter • Making Music • RedNex
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- LION KING Story Book
- ALADDIN Activity Centre
- THE TOY STORY (Preview)

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We've been building a solid reputation for the last 15 years... and our Apple accreditations support this.

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PERSONAL FINANCE - DEFERRED PAYMENT PLAN♦ FOR INDIVIDUALS VISITING OUR SHOWROOMS AND PAYING A MINIMUM OF 10% DEPOSIT

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OPTION 2: BALANCES OVER £1200: PAY NOTHING MORE FOR 4 MONTHS OR,

OPTION 3: UNLIMITED BALANCES OVER £500: CHOOSE OUR 'LOW COST' FIXED TERM PERSONAL LOAN, 24.9% APR OVER 2 YRS, OR 21.9% APR OVER 3 YRS - a Lower Cost alternative 2 or 3 year agreement, for those who wish to spread the cost over a longer period than 4 or 6 months.

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Written details available on request. †Subject to status and an £18 arrangement fee. Please contact us prior to visiting for Easy Application requirements.

GH BUSINESS FINANCE...

BUSINESS FINANCE: Weekly rates shown exclude VAT and are based on a fixed cost 3 Year Apple Commercial Credit Lease payable quarterly after an initial deposit payment. Available to all businesses (including recently established) making a minimum total purchase of £750 - *subject to status. FULL Details available on request.*

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If you can't visit us personally, why not ask for an Application Pack to request a convenient, flexible GH BUDGET ACCOUNT CARD. No deposit finance can be arranged by mail. Once established, you can purchase with your new card leaving your existing credit card limits intact.

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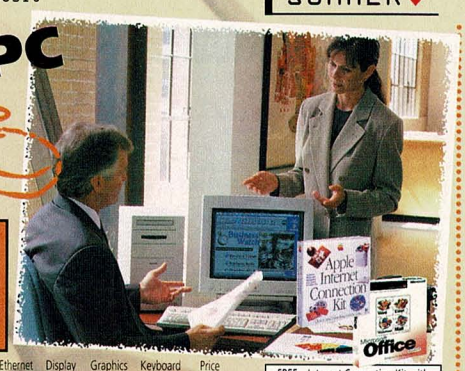
GH™ GH 15TH ANNIVERSARY 1982-1997

PowerPC MAC computers

FROM... £500
Just £3.96 Per Week❖



Model	MHz	CPU	RAM	DRIVE(S)	CD	Ethernet	Display	Graphics	Keyboard	Price
4400/160	160	603e	16	1.2Gb	✔8	✘	✘	Inbuilt	Design	£749
4400/160	160	603e	16	1.2Gb	✔8	✘	15" M/S	Inbuilt	Design	£969
4400/200	200	603e	16	1.2Gb	✔8	✘	✘	Inbuilt	Design	£899
4400/200	200	603e	16	1.2Gb	✔8	✘	15" M/S	Inbuilt	Design	£1099
4400/200	200	603e	16	2Gb	✔8	✔	✘	Inbuilt	Design	£1049
4400/200	200	603e	16	2Gb	✔8	✔	15" M/S	Inbuilt	Design	£1249
7200/90	90	601	8	1.2Gb	✔4	✔	✘	Inbuilt	✘	£500
7300/166	166	604e	16	2Gb	✔12	✔	✘	Inbuilt	Extended	£1649
7300/200	200	604e	32	2Gb	✔12	✔	✘	Inbuilt	Extended	£1999
7600/132	132	604	16	1.2Gb	✔8	✔	✘	Inbuilt	✘	£1299
8200/120	120	601	16	1.2Gb	✔8	✔	✘	Inbuilt	✘	£899
8550/200	200	604e	32	2Gb	✔8	✔	✘	Inbuilt	✘	£1899
8600/200	200	604e	32	2Gb + ZIP	✔12	✔	✘	Inbuilt	Extended	£2199
9600/200	200	604e	0	0Gb	✔12	✔	✘	✘	Extended	£1799
9600/200	200	604e	32	4Gb	✔12	✔	✘	✔IMS	Extended	£2499
9600/2x200	2x200	604e	32	4Gb	✔12	✔	✘	✔IMS	Extended	£3249
9600/233	233	604e	0	0Gb	✔12	✔	✘	✘	Extended	£2199
9600/233	233	604e	32	4Gb	✔12	✔	✘	✔IMS	Extended	£2899

FREE... Internet Connection Kit with ALL Power Macs and Microsoft Office FREE with... 7300, 7600 and 8200 Power Macintosh models!

POWERMAC OPTIONS...

ETHERNET 10 BaseT (RJ45), 7" PCI Expansion Card **£85**

ETHERNET 10 BaseT and 10 Base2 (Thin Coax), 7" PCI Card **£108**

256k Cache DIMM (75/85/9500) **£76**

512k Cache DIMM (75/85/9500) **£97**

CUSTOMISED POWERMACS
Ask GH about supplying you with the specification YOU want. Listed above are standard models, we can add extra memory, hard drives, accelerators, graphics cards etc.

MACCELERATE

Unlike many 'go-faster' upgrades which overspeed the standard processor, Maccelerate™ is a replacement for your Mac's original processor/daughterboard using the new faster 604e CPU with 2 integral 32k caches. Performance gains are massive - MAC USER RATED...

Mac User ★★★★★ Mac User

For PowerMac 7500, 7600, 8500 & 9500s

150MHz MacCelerate **£249**
180MHz MacCelerate **£349**
200MHz MacCelerate **£499**

PowerBook MAC computers

1400cs/117 12/750, DS **£1599**
1400cs/117 16/750, DS, Quad Speed CD **£1899**
1400cs/117 16/750, Quad Speed CD, DS, StyleWriter 2200, Carry Case **£2099**
1400c/133 16/1100, Quad Speed CD **£2599**
3400c/180 16/1300 **£2899**
3400c/180 16/1300, 12 Speed CD, Ethernet **£3099**
3400c/200 32/2000, 12 Speed CD, Ethernet, inc. SoftWindows 3.11 **£3549**
3400c/240 16/3000, 12 Speed CD, Ethernet **£4199**

POWERBOOK OPTIONS...

1400 6 Speed CD ROM **£199**
1400 ZIP Drive VST **£219**
1400 Car Adaptor VST **£79**
1400 AC Adaptor **£39**
1400 Battery **£69**
1400 TDK 28.8 Fax/Modem **£229**
1400 8-Bit Video Out Card **£70**
1400 8Mb Upgrade **£65**
1400 16Mb Upgrade **£119**
1400 24Mb Upgrade **£159**
3400 Lithium Ion Battery **£129**
Sony Portable CD Player & PCMCIA Adaptor **£309**
PowerBook Carrycases *from* **£25**
Accessories also available for earlier PBs inc.150/190/5300

MEMORY

RAM	4Mb	8Mb	16Mb	32Mb	64Mb	8/16/32/64Mb EDO DIMM UPGRADES AVAILABLE PLEASE CALL
SIMMs	£CALL FOR BEST PRICES!					
DIMMs	£CALL FOR BEST PRICES!					

Displays MAC

GH Budget 14" Multisync (.28)	£189
GH 15" Multisync (.28)	£239
Apple 15" Multiscan (.28)	£289
Apple 15" AV Multiscan (.28)	£349
Apple 17" 1705 TCO MultiScan (.26)	£399
Apple 17" 1710 TCO Trinitron MultiScan (.26)	£499
Apple 17" 1710AV TCO Trinitron MultiScan (.26)	£549
Apple 20" Trinitron MultiScan II (.26)	£1129
Mitsubishi 15" Shadow Mask HX Multisync (.28) Including 3 Year Warranty	£259
Mitsubishi 17" Diamondtron TXV Multisync (.25) Including 3 Year Warranty	£425
Mitsubishi 17" Diamondtron TXM Multisync (.25) Including 3 Year Warranty	£499
Mitsubishi 21" Diamondtron TXM Multisync (.28) Including 3 Year Warranty	£1049
Sony 15" 100SX Trinitron Multisync (.25)	£259
Sony 15" 100SFT Trinitron Multisync (.25)	£299
Sony 17" 200SX Trinitron Multisync (.25)	£439
Sony 20" 300SFT5 Trinitron Multisync (.30)	£979
Formac 17" F17 FST Multisync (.26)	£349
Formac 17" ProNitron F17 400 Trinitron Multisync (.26)	£449
D2 21" Electron 21 (.28) Including 3 Year On-Site Warranty	£1149

GH Prices **INCLUDE Adaptors** for all Monitors **FREE**!

DISPLAY OPTIONS...
Video and Graphics Cards...

I.M.S. Twin Turbo 4Mb Card **£269**
I.M.S. Twin Turbo 8Mb Card **£399**
Formac ProVision 2/20 (2Mb, 64 Bit, Half Length) **£155**
Formac ProVision 2/40 (4Mb, 64 Bit, Half Length) **£199**
Formac ProVision 4/60 (4Mb, 128 Bit, Half Length) **£299**
Formac ProVision 4/80 (8Mb, 128 Bit, Half Length) **£369**
Formac ProVision 4/80 (8Mb, 128 Bit, Accelerated, Half Length) **£549**
Miro Motion DC20 Video Editing Card (Adobe Premiere 4.2) **£699**
MacPicasso 520 (PCI, 64 Bit, 4Mb) **£199**
MacPicasso 535 (PCI, 128 Bit, 4Mb) **£290**
VRAM Upgrades... To give even higher screen resolutions and more colours etc. **£CALL**

Performa MAC computers

FROM... £699
Just £5.55 Per Week❖

Model	MHz	CPU	RAM	HD	CD	Display	TV/Text	Video	MPEG	Modem	Keyboard	Price	Software Pack
5260	120	603	12	1.2Gb	✔4	14" Integral	✘	✘	✘	✘	Design	£749	CLARIS WORKS
5320	120	603	16	1.2Gb	✔4	15" Integral	✔	✔	✔	✔28.8	Design	£949	DISNEY PLUS 3
6320	120	603	12	1.2Gb	✔8	✘	✘	✘	✘	✘	Design	£699	DISNEY PLUS 3
6320	120	603	12	1.2Gb	✔8	15" M/S	✘	✘	✘	✘	Design	£899	DISNEY PLUS 3
6320	120	603	12	1.2Gb	✔8	15" AV M/S	✘	✘	✘	✘	Design	£979	DISNEY PLUS 3
5400	160	603e	16	1.6Gb	✔8	15" Integral	✘	✘	✘	✔28.8	Design	£1099	FAMILY PACK
5400 Black Mac	180	603e	16	1.6Gb	✔8	15" Integral	✔	✔	✘	✔28.8	Design	£1199	FAMILY PACK
5500 Black Mac	225	603e	32	2.0Gb	✔12	15" Integral	✔	✔	✘	✔33.6	Design	£1529	FAMILY PACK
6400	180	603e	16	1.6Gb	✔8	✘	✘	✘	✘	✔28.8	Design	£849	HOME OFFICE
6400	180	603e	16	1.6Gb	✔8	15" AV M/S	✘	✘	✘	✔28.8	Design	£1099	HOME OFFICE
6400	200	603e	16	2.4Gb	✔8	✘	✘	✘	✘	✔28.8	Design	£999	HOME OFFICE
6400	200	603e	16	2.4Gb	✔8	15" AV M/S	✘	✘	✘	✔28.8	Design	£1249	HOME OFFICE
6400	200	603e	24	2.4Gb	✔8	✘	✔	✔	✘	✔28.8	Design	£1749	CREATIVE STUDIO
6400	200	603e	24	2.4Gb	✔8	15" AV M/S	✔	✔	✘	✔28.8	Design	£1999	CREATIVE STUDIO
6500	250	603e	32	3.0Gb	✔12	✘	✘	✘	✘	✔33.6	Design	£1379	HOME OFFICE
6500	250	603e	32	3.0Gb	✔12	15" AV M/S	✘	✘	✘	✔33.6	Design	£1659	HOME OFFICE
6500	275	603e	32	4.0Gb	✔12	✘	✔	✔	✘	✔33.6	Design	£Due May	CREATIVE STUDIO

FAMILY Pack...
• Grolier Multimedia Encyclopaedia • DK's Ultimate Human Body • Sammy's Science House • Thinkin' Things 3 • Full Throttle • PowerPete • The Best of European Soccer • Claris Works • HyperCard Player • Acrobat Reader • MacLink Plus • At Ease • Apple Internet Connection Kit • Apple Telecom 3.0
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DISNEY Plus 3 Pack...
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ALL PRE-INSTALLED ON HD. *PLUS on CD ROM...*
• Making Music • The Way Things Work • Daedalus Encounter • Rock Rap & Roll • RedNex • MYST
AND... • Disney's Lion King Story Book • Aladin Activity Centre • TOY STORY (Preview) • Internet Connection Kit

PERFORMA 630, 5200, 5260, 5300, 5320, 6200, 6300 and 6320 OPTIONS...

• **Personal COMMS Solution** *(models without Ethernet)* FAX, Internet and Answer Phone facility, etc... **14.4** version **£109** **28.8** version **£179**
• **Ethernet Cards** *(models without Personal Comms)* **Thin Co-Ax £59 UTP £59 AUI** (requires adaptor) **£59** • **Apple** Internet Connection Kit **£47**
• **Apple** Video Out Card **£219** • **MPEG** FMV Video CD Playback Card *(only fits 630 models without a DOS Card)* **£175** • **D2** FM Radio Tuner **£59**

PERFORMA 5400 and 6400 OPTIONS...

• **Apple** Video-In Card **£69** • **Apple** Video-In TV Tuner Card **£129** • **Apple** COMMS Slot II Ethernet Card **£75** • **Apple** 256K Level 2 Cache Card **£75**

Manufacturers' specifications and GH prices are correct at time of going to press, however, they may fluctuate and we therefore reserve the right to amend them - please confirm prices before ordering. Software/Product packaging for bundled systems/items may not be included and is shown for illustration purposes only.

PRINTERS

LASER PRINTERS...

APPLE LaserWriter 4/600PS - A4, 600 dpi Mono £575
APPLE LaserWriter 12/640PS - A4, 600 dpi Mono £999
APPLE LaserWriter 16/600 - A4, 600 dpi Mono £1399
APPLE LaserWriter 12/660PS - A4, 600 dpi Colour £4499
HP LaserJet 6MP - A4, 600 dpi Mono, 3Mb RAM, 8ppm. Features both Parallel and Local Talk Connections £649
LEXMARK Optra R+ Pro - A4, 1200 x 1200 dpi Mono, 8Mb, LocalTalk, 16ppm at 600dpi or 8ppm at 1200dpi, On-Site Maintenance £1199
NEWGEN DXP - A3, 600 x 600 dpi Mono, Ethernet, PS2, LocalTalk, 8 ppm £2399
NEWGEN DXP+ - A3, 1200 x 1200 dpi Mono, Ethernet, PS2, LocalTalk, 8 ppm £3999
GCC Elite 12/12 - A4, 600 x 600 dpi Mono, 16Mb, Ethernet, features Edge to Edge print! £1099
GCC XL 608 - A4, 600 x 600 dpi Mono, 6Mb, Ethernet, features Edge to Edge print! £1899

INKJET PRINTERS...

APPLE StyleWriter 1500 Colour 720 x 360dpi £149
APPLE StyleWriter 2200 Colour 720 x 360dpi £229
APPLE StyleWriter 2500 Colour 720 x 360dpi £229
APPLE StyleWriter EtherTalk Kit £145
CANON BJC4550 Colour - A3 Mac or Amiga £309
EPSON Stylus Colour 600 - Colour - A4 1440 x 720dpi £229
EPSON Stylus Colour 800 - Colour - A4 1440 x 720dpi £329
EPSON Stylus Colour Pro - Colour - A4 720 x 720dpi £289
EPSON Stylus Pro XL+ - Colour - A3 720 x 720dpi £799
EPSON Stylus Colour 1520 - Colour - A2 1440 x 720dpi £599
HP 870Cxi DeskWriter - Colour 600 x 600dpi £329
LEXMARK 4079+ - A3, 360 dpi Colour, 4Mb, PS2, LocalTalk £2149
LEXMARK 4079+ Pro - A3, 360 dpi Colour, 20Mb, PS2, L/Talk £2389

PRINTER UTILITIES...

POWERPRINT - Allows use of parallel printers with your Mac £79
STYLESCRIPT - Adobe PS RIP for Apple Colour StyleWriters £79
BIRMY PostScript RIP - for Stylus Pro/Pro XL+ £175
EPSON PS RIP - for new Stylus 600/800/1520 range £Available Soon

PRINTER CONSUMABLES

APPLE STYLEWRITER...		
I, II, Portable, 1200, 1500 (M8041G/A)	Black Cartridge	£14
1500 (M4609G/A)	Colour Cartridge	£23
2400, 2500 (M3240G/A)	Black Cartridge	£26
2400, 2500 (M3328G/A)	Colour Cartridge	£33
2400, 2500 (M3330G/A)	Black Ink Tank	£7
2400, 2500 (M3329G/A)	Colour Ink Tank	£13
2500 (M5577Z/M/A)	Photograde Kit	£47
2500 (M5581G/A)	Premier Plus Paper	£29
2500 (M5579G/A)	Photograde Ink Cartridge	£25
Colour StyleWriter Pro (M3822G/A)	Black Hi-Capacity Cartridge	£8
Colour StyleWriter Pro	C, M, or Y Cartridge	ea. £8
Colour StyleWriter Pro	CMYK - 4 Col Set Cartridges	£38
EPSON...		
Stylus 500/600 (S020093)	Black Cartridge	£15
Stylus 500 (S020097)	Colour Cartridge	£24
Stylus II (S020047)	Black Cartridge	£14
Stylus II (S020049)	Colour Cartridge	£20
Stylus Pro XL, Pro XL+ (S020034)	Black Cartridge	£11
Stylus Pro XL (S020036)	Colour Cartridge	£24
Stylus XL+ (S020066)	Colour Cartridge	£29
Stylus 400/600/800/1520 (S020089)	Colour Cartridge	£16
Stylus 800/1520 (S020108)	Black Cartridge	£15
Stylus A4 Paper (S041059)	360dpi Paper, 100 Sheets	£10
Stylus A4 Paper (S041061)	720/1440dpi Paper, 100 Sheets	£12
Stylus A4 Paper (SE41001)	Transfer Paper, 10 Sheets	£13
Index Cards (S041054)	50 Cards, A6 Size	£8
GENUINE APPLE Toner Cartridges		
LaserWriter 300, 320, 4/600 (M2045G/A)		£45
LaserWriter LC, SC, NTR (M0089LL/A)		£55
LaserWriter Select 360 (M1960G/A)		£69
LaserWriter 12/640 (M4683G/A)		£89
LaserWriter 16/600 (M2473G/A)		£79
GENUINE APPLE Colour LaserWriter Consumables		
Fuser Oil (M3755G/A)		£29
Black Toner (M3756G/A)		£77
Colour Toner - C, M, or Y		ea. £89
CANON BJC 4550 and HP PRINTER CONSUMABLES		£Please Call

CAMERAS

CASIO QV-10a Camera, 320 x 240, 96 Images, Flash £309
CASIO QV-100a Camera, 640 x 480, 96 Images, Flash £429
CASIO QV-300a Camera, 640 x 480, 96 Images, Flash £539
APPLE QuickTake 200 Camera, 640 x 480, 30 Images, Flash £399
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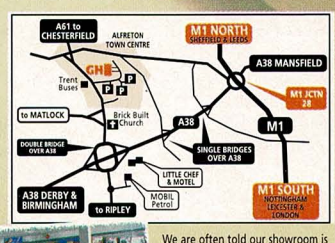

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New home PowerMacs ■ The latest digital cameras ■ Space-age video card ■ Illustrator 7 ■ Hybrid printer and scanner ■ News Editor: Richard Hill.

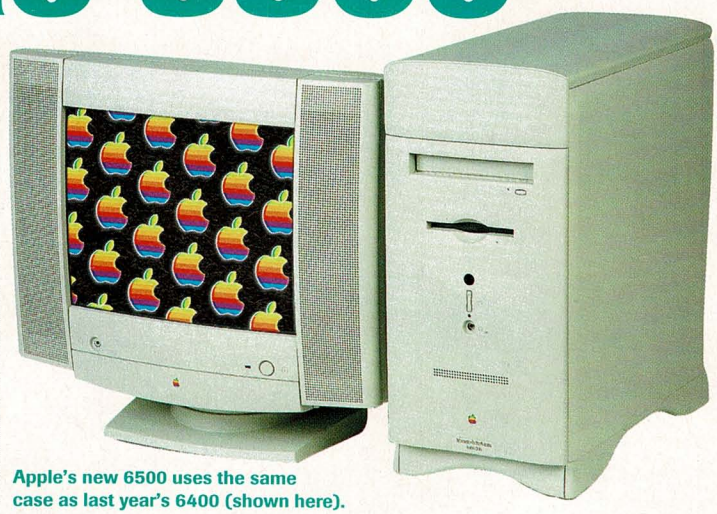
PowerMac 5500 and 6500

With its latest set of home Macs, Apple has dropped the Performa tag in favour of naming every desktop machine a PowerMac.

Apple introduced the Performa brand in 1992 to distinguish its home range from its professional Power Macintosh line. However, research has highlighted some drawbacks: potential customers didn't appreciate the distinction, assuming instead that these home models were just under-powered shadows of their tower-encased cousins. So the Performa is dead.

With this change, it's still easy to work out which machines will be best-suited for your needs because, like the recently-released business and graphics PowerMacs, each model is clearly defined as suited for a certain task. Take the Power-Mac 6500/275, for example: now the fastest home PowerMac on the block, it offers an almost over-whelming selection of software. Pull it out of the box, plug it in and get straight into image editing, special effects, 3D or even video editing. It couldn't be simpler.

Like the other new models, the 6500/275 doesn't just offer a faster processor than any of its home predecessors. Apple's designed a completely new motherboard for these machines, adding a 2D graphics chip previously reserved for the 9500-series powerhouses, along with a 3D card that can make any software using the QuickDraw 3D display system fly. More subtle refinements include ramping up the video RAM on each motherboard, adding a RAM chip cache and tweaking the system bus to enable faster data transfer.



Apple's new 6500 uses the same case as last year's 6400 (shown here).

Add it all together, Apple says, and you have a machine over 50% faster in raw speed terms than last year's 6400/200 (see MACFORMAT 42) – but video capturing is 100% faster, 2D graphics display is 69% faster and QuickDraw 3D games and software are up to 900% faster!

The other machines feature impressive, if slightly lower, speed improvements, plus new software. The 5500 and both 6500s include Gremlin's *Actua Soccer*.

See "Mac Facts" on page 118 to find out how these Macs compare with what's already on offer. ➤

Apple's new PowerMacs

All four new PowerMacs include the following software: *Acrobat Reader, Aladdin Activity Centre, Apple Internet Connection Kit, Best of European Soccer, ClarisWorks, Descent, Full Throttle, Grolier Multimedia Encyclopedia, Lion King Storybook, Power Pete, Sammy's Science House, Thinkin' Things, Toy Story Preview, Ultimate Human Body.* They also include a 15-inch monitor, a fast internal modem and Mac OS 7.6.

The 5500/225 continues Apple's experiment in designing Macs for the living room, having an all-in-one black case for the motherboard and monitor. Aimed squarely at the family, it also features *Actua Soccer, Kai's Power Goo* and a combined TV and FM radio receiver. Processor: 603e at 225MHz. RAM: 32Mb. Hard drive: 2Gb. CD-ROM: 12x. PCI slots: 2. Modem: 33.6Kbps. Price: £1,935.

The 6500/250 is Apple's Home Office Mac, offering *Claris Organizer* and *ClarisImpact* alongside the regular Apple bundle. It also includes *Actua Soccer.* Processor: 603e at 250MHz. RAM: 32Mb. Hard drive: 3Gb. CD-ROM: 12x. PCI slots: 2. Modem: 33.6Kbps. Price: £2,049.

The 6500/275 is Apple's Creative Studio, featuring Avid's Cinema video card and simple editing software, along with *Dabbler, Cubasis, Kai's Power Goo, PhotoDeluxe, PageMill* and *3D World.* You also get *Actua Soccer* and the TV and FM radio receiver thrown in for good measure. Processor: 603e at 275MHz. RAM: 32Mb. Hard drive: 4Gb. CD-ROM: 12x. PCI slots: 2. Modem: 33.6Kbps. Price: £2,669.

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Digital cameras

Two new digital cameras bring focus to the latest trends in the fast-growing digital input market. While Konica's Q-Mini is a compact model, tailor-made for the home snapper, Kodak hopes its DC120 will redefine the professional view of digital technology.

Kodak DC120

A household name and pioneer of film camera formats over the decades, Kodak is going all-out to convince camera users that the future is digital. We review its current consumer model, the DC25, on page 76. This time, though, Kodak is pitching its DC120 at the professional community, where many photographers' experience of digital cameras suggest the devices can't capture pictures with the detail the professionals demand – unless, of course, you're prepared to shell out thousands of pounds.

The DC120 uses Kodak-derived software to store each picture it takes at 1,280 x 960 pixels (four times a digital camera's standard resolution), but Kodak expects it to cost less than £1,200. The camera converts its 836,400-pixel input into over 1.2 million pixels' worth of information ready for your Mac to receive. The DC120 can take pictures in 24-bit colour, equivalent to over 16.7 million colours on screen at once.

The DC120 uses 2Mb of internal memory to store up to 20 images at the standard resolution of 640 x 480, but you can also buy CompactFlash memory cards to store 2Mb or 10Mb's worth of pictures. You can call up pictures you've taken on the DC120's Liquid Crystal Display viewfinder, deleting any you don't need. You can also transfer images straight into *Photoshop* on your Mac with the Kodak plug-in, or edit your images using the supplied *PhotoEnhancer 3.2*.

The camera uses a 35mm zoom lens to offer automatic focusing (from half a metre away out to infinity), plus automatic exposure, shutter operation and flash. There's a macro option for close-up work. Aperture settings include telephoto and wide angle views. For more details on the DC120, contact Kodak's Digital Imaging Hotline on 0800 281487.

Redefining the professional digital camera, Kodak's DC120 uses software technology to give you a high resolution image for less than £1,200.

Konica's Q-Mini camera is ideal for home use, and enables you to store dozens of images at once with CompactFlash cards.

Konica Q-Mini

The Konica Q-Mini digital camera may not be able to match the high resolution of the DC120, but for around £585 this May release offers many of the features you'd find in more expensive models. It is designed to help you apply the everyday uses of photography, like recording special occasions, to the work you do on your Mac. The camera also includes a copy of Adobe's *PhotoDeluxe* software for simple editing of your images after you've taken them and then transferred them to your Desktop.

The Q-Mini takes photos at the standard resolution of 640 x 480 pixels, and can store up to 47 images at once – depending on the number of colours you choose – on CompactFlash memory cards.

The LCD viewfinder enables you to check over the pictures you've taken, so you can delete the bad ones before anyone sees them...

You can take focused pictures at any distance from 0.7m to infinity, or use the macro facility for closer work. The Q-Mini also offers automatic fócusing, exposure and flash controls. For more details, contact Konica on 0181 751 6121.

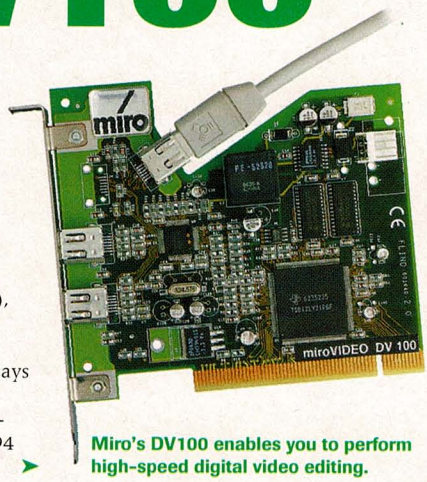
miroVideo DV100

Already well-known for its video cards, which enable your Mac to display high-quality full-screen video, Miro is reaching into the future with its newest card, the DV100. It's one of the first devices available to bring genuine high-speed data transmission to your Mac, using a new standard called IEEE-1394 (also known as "FireWire").

Many in the industry, including Apple, see FireWire as the successor to the SCSI (Small Computer Systems Interface) system your Mac uses today for exchanging information with hard drives, CD-ROM drives and other devices. FireWire can shift data over five times faster than even enhanced SCSI connections, making it easier, for example, to use digital video cameras with your Mac, giving you more precise control over the material you film.

FireWire obviously has great potential in the Mac's fast-growing video market, enabling you to send huge amounts of video data from your camera to your Mac, ready for editing. The DV100 takes advantage of the speed hike with innovative and original features: you can use the card to scan through a videotape and compile the images into a storyboard of each new scene you've filmed, changing the order of scenes before the data arrives on your Mac to save time in the editing process.

Because it's still early days for this technology, you can only use the DV100 with one range of cameras (from Sony), but more manufacturers are expected to announce compatible devices shortly. Miro says the DV100 should cost about £820 and go on sale in June – contact the company on 01494 510250 for more details. ➤



Miro's DV100 enables you to perform high-speed digital video editing.

From only... £249!

If you could fit MACCELERATE! to a 100 metre sprinter...

Mac User April '97

You know what it's like...

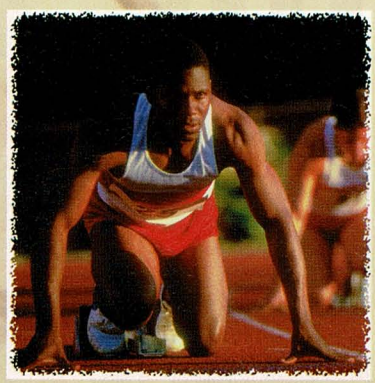
When you're starting your Mac, loading a program or file, waiting for that Photoshop™ effect, or in fact doing pretty much anything... your computer doesn't feel as fast as it used to, does it? Its not become tired itself, but the demands of the latest OS versions and the newest applications keep getting higher and higher and slow your system down. And, if you've tried one, you'll know that today's Macs are a lot faster.

So, should you buy a new Mac now?

What is MACcelerate™?

Unlike many 'go-faster' upgrades which overspeed the standard processor, Maccelerate™ is a complete replacement for your Mac's original processor and daughterboard - it uses the new fast 604e CPU with 2 integral 32k caches. So, because the 604e is much more powerful than a 601 or 603, and by combining the extra horsepower it offers with the higher clock speeds of 150, 180 or 200MHz. You can see from the charts that...

The performance gains are massive.



The current Olympic Record is held by Donovan Bailey who was timed at 9.84 seconds during the 1996 Olympic Games in Atlanta

The New Olympic Record would be just 2.62 secsonds.

Can I fit MACcelerate™ myself?

If you've never fitted an internal upgrade yourself, don't worry...

Your Mac was designed by Apple to be processor upgradeable and Maccelerate™ couldn't be simpler to fit. No soldering, no cables, no software to load (it simply requires System 7.5.3 or later), just plug Maccelerate™ in and reboot!

Simply fit to your Apple Macintosh 7300, 7500, 7600, 8500, 8550, 8600, 9500, 9600 or many compatible Macintosh OS clones and re-boot!

Or, if you prefer, Harwoods can fit yours for you.

MACcelerate™ Quality...

Designed and built by Europe's largest manufacturer of Motorola Processor cards, you can be assured of its quality and reliability. Get the best from your Mac, accelerate it now with MACcelerate.

Not all Processor Boards are Created Equal...

The MACcelerate™ range has two important features, not found on similar products, which are essential to maintain the highest standards of system reliability.

- **PROCESSOR DECOUPLING CIRCUITRY (PDC)**

Whilst the PowerPC 604e was designed to operate at 3.3 volts, Power Macintosh main circuit boards operate at 5 volts. Although the processor's I/O buffers can be run at 5 volts, this may decrease the processor's lifespan. Perhaps not such a serious problem for infrequent users, but crucial if the system is to be used regularly or even constantly (eg. servers etc.). MACcelerate™ operates its processor at the correct voltage - as specified by Motorola.

- **PHASE LOCKED LOOP CLOCK SYNTHESISER (PLLCS)**

We all know how a Macintosh may occasionally freeze for no apparent reason. Well, that's why MACcelerate™ incorporates a Phase Locked Loop Clock Synthesiser which ensures that system synchronisation on start-up is set to a more reliable fixed frequency between the main circuit board's upper and lower tolerances.

The result is a far higher standard of operational reliability than found when using boards that don't incorporate PLLCS circuitry.

Buy with Absolute Confidence...

Because we're so sure you'll be happy with MACcelerate™ you can now take up our offer to...

- **TRY BEFORE YOU BUY**

If you want to see just how fast your Mac can operate with Maccelerate, call in and our Apple Authorised Service engineers will install one, with no obligation to buy, so you can feel the speed for yourself. Just phone us in advance to make your appointment.

- **MONEY BACK GUARANTEE**

We're so confident you'll be pleased with Maccelerate that it comes with a money back guarantee* so that you can try one out safe in the knowledge that you can return it to us if you're not completely satisfied.

- **PLUG-AND-GO**

Maccelerate does not invalidate your Mac's warranty and full product support is included.

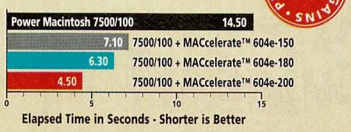
For a Motorola™ 604e PowerPC™ performance increase for YOUR system and ALL its applications... just 'Plug-and-Go'.

MACcelerate™ Specification, Performance and Prices

Photoshop 3.05 Gaussian Blur

Test Picture: 1181 x 1671 pixels - 24bit

PERFORMANCE GAINS 204% to 322%

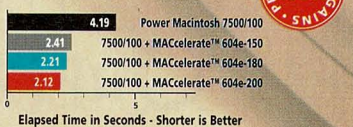


Elapsed Time in Seconds - Shorter is Better

KPT Bryce 2.0 Rendering

Test Picture: 480 x 360 pixels

PERFORMANCE GAINS 174% to 198%

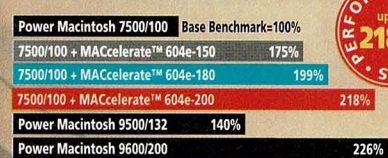


Elapsed Time in Seconds - Shorter is Better

MacBench 3.0 Processor Performance Test

Test: Combined Floating Point and Processor Speeds

PERFORMANCE GAINS up to 218%


Power Macintosh 7500/100 Base Benchmark=100%
7500/100 + MACcelerate™ 604e-150 175%
7500/100 + MACcelerate™ 604e-180 199%
7500/100 + MACcelerate™ 604e-200 218%
Power Macintosh 9500/132 140%
Power Macintosh 9600/200 226%

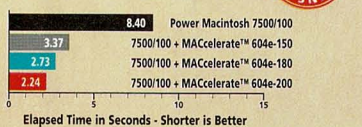
Why consider replacing your 7500? Add MACcelerate for a moderate cost and almost equal the performance of the latest 9600/200!

Overall performance increases measured using the industry standard MacBench 3.0 application. Results are combined for the integral floating point maths co-processor and main processor. Longer is Better.

Photoshop 3.05 RGB to CMYK

Test Picture: 1181 x 1671 pixels - 24bit

PERFORMANCE GAINS 249% to 375%



Elapsed Time in Seconds - Shorter is Better

Earning a MacFormat Magazine Classic Award, MACcelerate recently scored 91% in their review article. MacFormat said "...the MACcelerate is your ticket to first-class performance. Excellent".

MACcelerate has just received a four and a half mice rating in Mac User which said "If you need speed, you have one of the processor upgradable Macs, and you have a few hundred pounds to spend, then you could certainly do worse than buy a MACcelerate card!"

Point your web browser at Motorola's own web site... http://www.mot.com/SPS/PowerPC/products/semiconductor/chips.html to see why the 604e is the most powerful processor available for YOUR Macintosh desktop system.

150MHz MACcelerate™ £249 + VAT
New 604e with 2 x 32K Internal Cache

180MHz MACcelerate™ £349 + VAT
New 604e with 2 x 32K Internal Cache

200MHz MACcelerate™ £499 + VAT
New 604e with 2 x 32K Internal Cache

MACcelerate™ is distributed by ***Gordon Harwood Computers.*** Dealers please call for prices.

*All prices exclude VAT and are shown for business purchasers only. Consumers, please ask for VAT inclusive prices. All Trademarks are acknowledged. Prices correct at time of going to press, E&OE. *Maccelerate money back guarantee is for 14 days after purchasing direct from Harwoods and excludes carriage, repayment based on RRP on date of return.*

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Illustrator 7.0

Over the past few months, graphics leader Adobe has revamped both its image-editing flagship *Photoshop* and its DTP pioneer *PageMaker*. Now the last of its core programs gets its turn. *Illustrator 7* is ready for you to assess its new interface design.

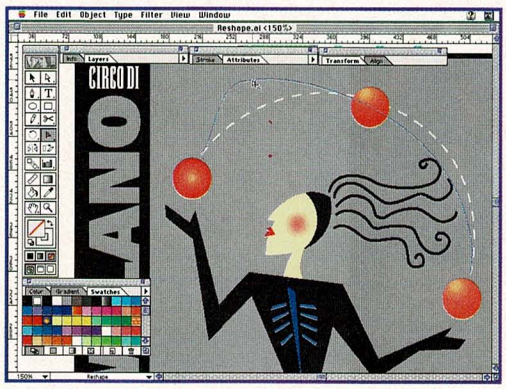
The company took a calculated risk in changing many familiar working practices and keyboard shortcuts in *Photoshop* – now you can see that it has applied the same principles to *Illustrator* and *PageMaker*. The idea behind this is to enable you to focus on creativity, rather then needing to remember where a particular tool is in which-ever program you're using.

All three programs employ the same keyboard shortcuts for any commonly-used commands and position the same or similar commands in the same place in each program menu. They also now feature similar tool palettes.

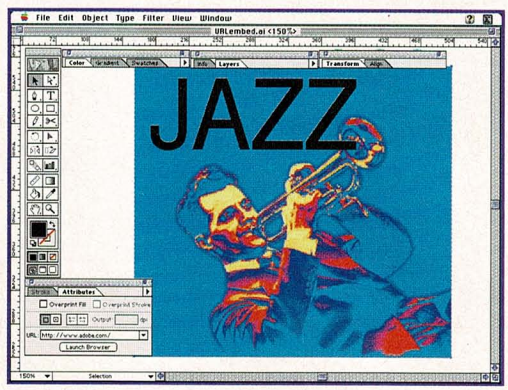
Adobe has also been working to improve file importing, so if you use a combination of Adobe software you'll find it a lot easier to exchange files between programs and to use favourite working methods across all your programs.

Illustrator 7 is Adobe's vector graphics package, complementing the roles of *Photoshop* and *PageMaker* by enabling you to work with a versatile range of drawing tools. You can make the images you create smaller without losing detail and bigger without the individual pixels starting to show.

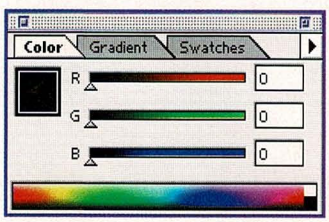
New *Illustrator* tools include **Reshape,** which enables you to modify an overall shape, bending it in one direction, for example, without affecting the smaller details within it. *Illustrator 7.0* also supports design principles found in countries such as Japan and China. You'll need Apple's Language Kits to use one of these languages, but even in English you can take advantage of design features such as vertical text.



***Illustrator's* new Reshape tool gives you precise control over lines and shapes. We're using the tool here to adjust the line linking the juggler's balls.**



Adobe's added a selection of tools to make it easier for you to create Web material in *Illustrator.* You can make an image link directly to another Web page, for example.



The new RGB colour charts will make it simpler to create material designed to be viewed on-screen.

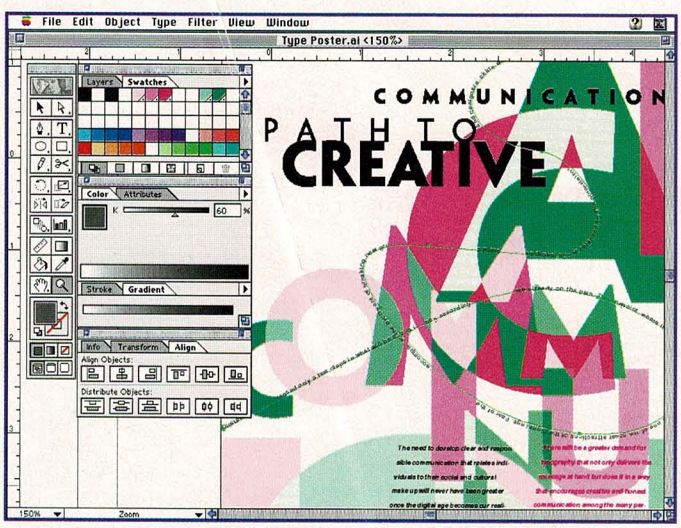
You'll find it easier to produce accurate designs thanks to *Illustrator's* new **Grid** feature, which enables you to set up the spacing and appearance of a grid so that you can plot and position all image elements precisely. The grid, of course, won't show up on a printout, only on screen.

Illustrator also introduces a new Adobe interface feature: you can move palette tabs from one palette to another, or pull palettes out from others to make a new palette. The idea is that you can set up the palettes exactly as you prefer, to suit your working methods.

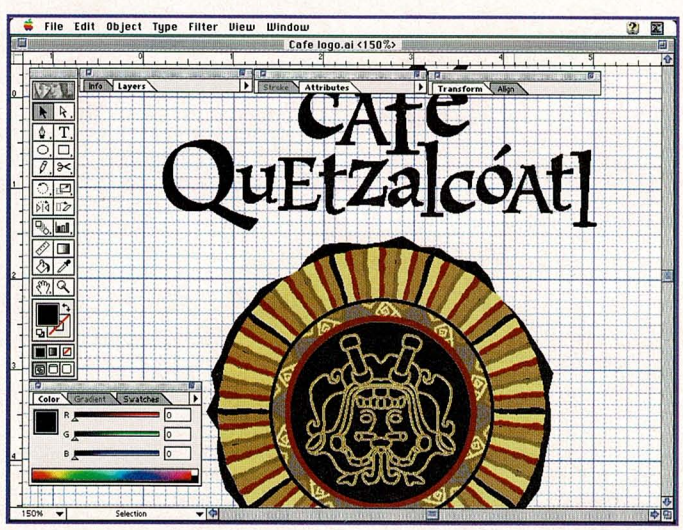
Carefully screened

With so much design now being produced for screen media – such as video or the Web – as well as print, Adobe has added an RGB colour system for *Illustrator*. While documents designed for paper use the four-colour CMYK system based on the four inks used in printing, the RGB colour table creates a full range of colours based on the three colour guns used by monitor screens and television. Using RGB means you can be confident that the colours you choose in *Illustrator* will reproduce accurately when your image appears in the final screen-based product.

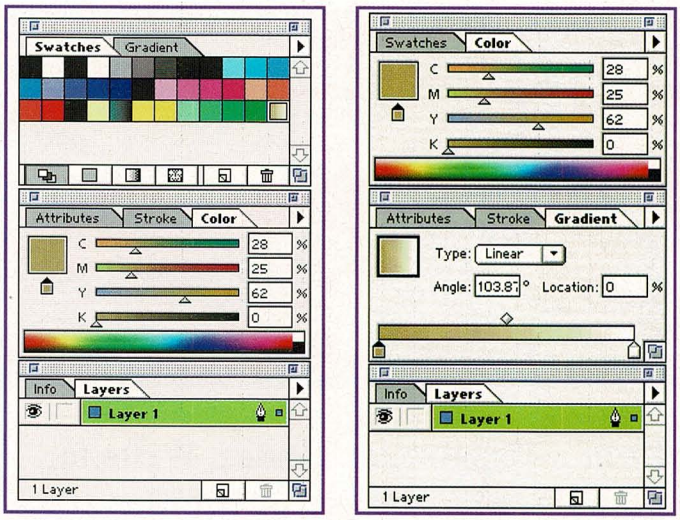
For Web page design, Adobe has thoughtfully added a ready-made palette of 216 colours that are guaranteed to reproduce accurately on any Web browser on either Mac or PC – not as easy as it sounds, because of differences between different systems. Print designers



***Illustrator 7.0* joins stablemates *Photoshop* and *PageMaker* by adopting Adobe's new interface design, making it easy to use the three together.**



You can now use a grid and guides for more precise drawing. You can adjust the grid's weight and scale, and it's already configured not to print out.



You can change the way *Illustrator's* palettes are grouped together to suit the way you work, simply by dragging a tab from one palette to another.

needn't feel left out either because *Illustrator 7.0* uses Apple's ColorSync system to match the colours on screen with the printed output.

Illustrator's ability to include Web links within its images is another Internet innovation. If you design complex Web pages, you'll be used to creating an image first, then using a Web page editor to embed links within it – the result's called an image map. With *Illustrator 7.0*, you can allocate a Web address to any part of your image, then save the result in GIF format for your Web page. The GIF will retain the Web addresses you've made.

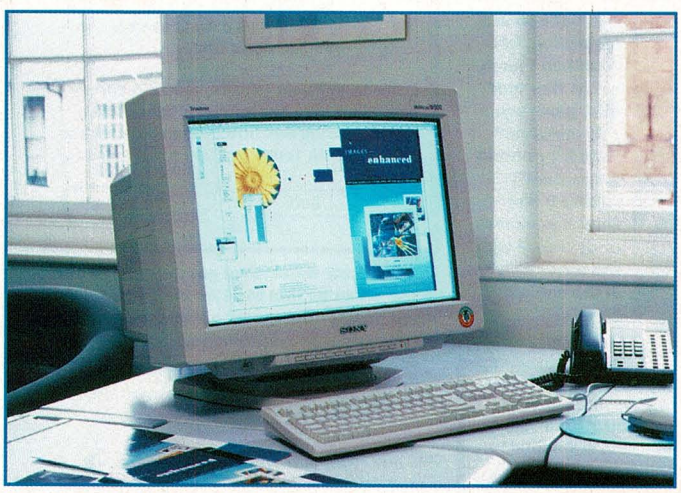
The *Illustrator 7.0* box includes over 1,000 clip art, texture and stock photo samples, together with 300 fonts. If you register your copy, you'll also receive membership of Adobe's Image Club, a private Web site packed with exclusive artwork. **Price:** £347. **Out:** May. **Contact:** Adobe on 0181 606 4001.

Sony Multiscan W900

Is this the ultimate monitor for desktop publishing? The Sony Multiscan W900's unusual format enables you to display two full-size A4 pages side by side on its screen – which means no more moving around and zooming to see what you're doing.

Offering 30% more viewing space than even a 20- or 21-inch monitor, the W900 boasts a maximum resolution of 1,920 by 1,200, although your Mac will need an 8Mb graphics card (from IMS or Matrox) just to display an image of that size.

Sony has also used screen glass and filter technology to increase the screen's brightness. Set to appear in May, the W900 should cost no more than £3,500. Contact Sony on 0990 42442 for more details.



If you're tired of losing valuable time moving around the screen, Sony's Multiscan W900 monitor will enable you to see two full-size pages at once.

Alps MD-4000

Not content with pushing the frontiers of design by offering unusual input devices such as the GlidePoint, Alps Electric has come up with a twist on the current digital imaging boom. If nothing else, the MD-4000 should go down well with anyone who loves those toy cars that transform into rockets within moments. You see, this printer is a scanner in disguise...

With colour printers moving from mere low-cost machines to offering photographic clarity, and scanners becoming this year's must-have item for any decent Mac set-up, the MD-4000 combines both into one device. Your £700 nets you not only a 600 dots-per-inch scanner, but also a 600dpi printer.

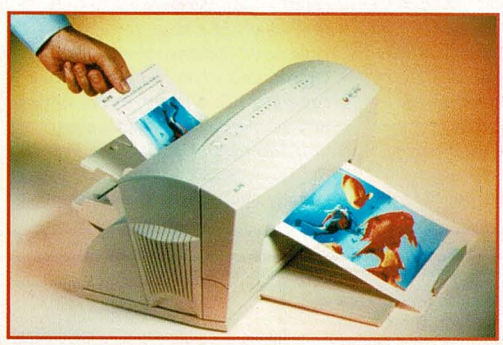
Designed as an all-in-one image studio, the MD-4000 enables you to scan in an image in millions of colours, tidy it up and modify it in a graphics program, then print it out, losing little of the colour or detail of the original.

You don't even have to own a graphics program: the package includes Alps' own *Copy Studio* program, which makes it quick and easy to scan an image and then scale it up or down for printing. *Copy Studio's* tiling feature means you can enlarge an image beyond the size of the A4 (magazine-size) sheets the printer uses by printing across several sheets, matching up the edges automatically.

For more detailed changes, Adobe's *PhotoDeluxe* is included. Based on the technology behind *Photoshop*, the program enables you to edit your images, adding or removing elements from your composition, for example. *PhotoDeluxe* also includes over 500 images ready for your own use.

The printer takes cartridges using Alps' own Micro Dry ink formulations. Alps claims that Micro Dry inks will not fade or smudge and that they can print on a variety of papers and plastics – or even cotton T-shirts. The MD-4000 can also produce a metallic-effect sheen over an image, a feature Alps says no other comparable printer is capable of.

Watch for a full test of the MD-4000 in MACFORMAT next issue. **Price:** £704. **Out:** now. **Contact:** Alps Electric in Ireland on 00 353 29 70677.



Two for the price of one: Alps' MD-4000 offers an easy-feed scanner and a high quality colour printer in the same case.

Coming soon

Big-name products in the pipeline

Flash 2
This update of Macromedia's Web animation tool, part of the *Shockwave* family, adds sound effects.

Virtual PC
This new approach to enabling your Mac to run PC software comes from Connectix, of *RAM Doubler* fame. *Virtual PC* imitates the machine itself (rather than *Windows*), offering more reliable performance.

Painter 5
Fractal Design's natural media flagship returns with a brand new interface, plus new tools like Liquid Metal and 100 new brush types.

mTropolis 2
The update to this highly respected multimedia authoring package will enable you to create good interactive material for the Web using the totally new mPire system. **MF**

Yet more Mac clones? Talk about being spoilt for choice! Or talk about whatever Mac-related topic you like, and if your letter is published here you'll win a MACFORMAT binder. (You can of course turn to page 142 and order one, but as that bloke used to say on the telly, it's *good* to talk...!)

Share your views and win a MACFORMAT binder. Write to: Alex Summersby, AppleTalk, MACFORMAT, 30 Monmouth Street, Bath BA1 2BW, e-mail macformat@futurenet.co.uk

System 8 Wish List

Ever get tired of the way the Finder copies your files? If you try to copy 20 or so files from one folder to another and one or more of the files already exist, you have to cancel the copy, or let the Finder overwrite the files in the destination folder. On my Apple IIGS (once a great computer) the Finder handles this much more intelligently: if the Finder encounters this it gives me a dialogue letting me choose among the following options:

- skip all duplicates
- skip just this duplicate (it shows the same dialogue again if it encounters another duplicate file)
- overwrite all duplicates
- overwrite just one duplicate
- cancel the copy operation

This is very handy. On the Mac I have to go back to the original folder and select only the files I want to copy, being careful not to select one that already exits in the destination folder.

Glenn Verhalle
The Netherlands, via FutureNet

Any more System 8 Wish Lists?

Anti-French bias?

In several issues of MACFORMAT you've had letters accusing you of "anti-American bias". In response, I'd like to say that all of you should just shut up. I live in France, and finding French educational or entertainment software for Mac isn't that easy. Most large companies, such as Apple, Microsoft, Adobe, Quark, and so on localise their software, but it is often very sloppy and greatly delayed when compared to US or UK releases. French System updates, for instance, are usually about 90 days later than their anglophone counterparts. All this is to say that you should stop whining because a couple of U's are missing in your software.

Yannick Wurm,
Le Pradet, France

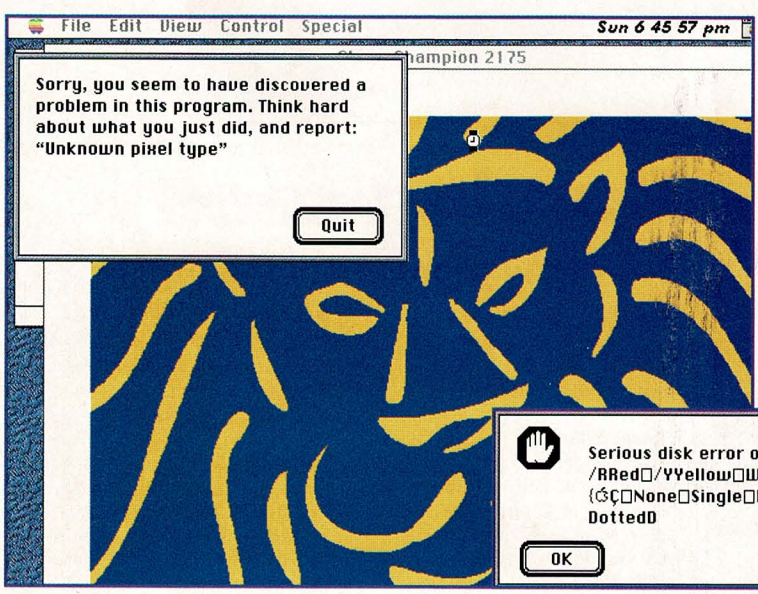
Apple's policy is now to bring out the international versions of each System revision at the same time (though languages that use two-bit alphabets, such as Japanese, might take a little longer). So the French System should be released at the same time as the UK.

Into the future

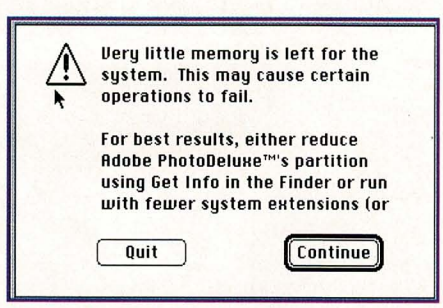
Exactly three years on from buying my 475 I now desperately need something with a bit of wellie! I now have to make that decision not to buy another Apple again. Why? Upgradability or lack of it is why! Unless you're blessed with loads of beer vouchers, the humble Mac owner who looks to a Performa will forever be stuck in a few years' time. Look at the clones and it is a different story. Nearly all models have upgradable daughterboards, and Umax seem to offer a "future-proof" version of the 6400. I have nearly all the software the 6400 offers as "free" anyway. Apple simply does not offer long-term value for money in its lower-end systems. Now if Apple offers the upcoming 6500 with an upgradable CPU and no bundled software, then this 475 owner will be the first to buy.

Dewi Morgan
Chepstow

The trend seems to be towards more and more complete bundle "solutions", with one from Umax this issue including a scanner and everything but the kitchen sink (see page 68). If you don't want all the extras, there are "bare-bones" systems coming out from retailers such as Computer Warehouse – and we've just heard that Dabs Direct is bringing out its own range of Mac compatible computers at prices even lower than CW's! If

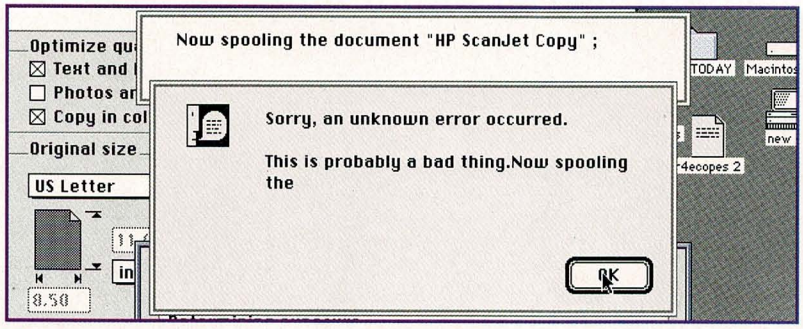

File Edit View Control Special
Sun 6 45 57 pm
Sorry, you seem to have discovered a problem in this program. Think hard about what you just did, and report: "Unknown pixel type"
Quit
Serious disk error on file: a□
/RRed□/YYellow□White□j□o□v□
(□Ç□None□Single□Word□Double□
DottedD
OK

Silly Things Your Mac Says, number 489 in a series: left, from Jonathan Plumb of Ely. Has your Mac given you a silly message? Grab it by hitting [command] [shift] 3 and send it in on disk, or by e-mail with the word "Silly" in the subject line.

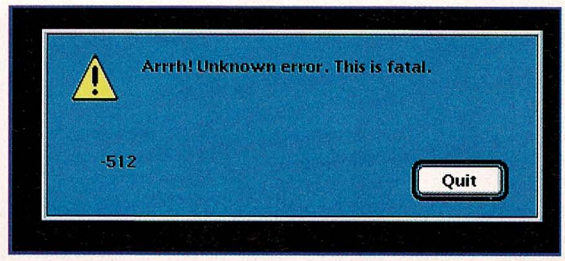

Very little memory is left for the system. This may cause certain operations to fail.
For best results, either reduce Adobe PhotoDeluxe™'s partition using Get Info in the Finder or run with fewer system extensions (or
Quit
Continue

Or? Or what? Brian Read got the dialogue box above when he first tried *Adobe PhotoDeluxe*, but when he hits "Continue" it launches and carries on working with no problems.

This one (left) is from Richard Christie, via e-mail. He got it, he says, when he double-clicked on the ruler in *Word 5.0* and selected the "Clear all Tab Stops" button.


Now spooling the document "HP ScanJet Copy" ;
Sorry, an unknown error occurred.
This is probably a bad thing.Now spooling the
OK

This one was sent in by David Rothblatt of Rutherford, NJ, USA, who says: "I lucked into an issue of your magazine over here stateside but I haven't seen one since. Anyway, I thought this screen-shot might be good for your letter column." What can we say but "probably".



"Macs can be melodramatic too!" comments Jane Ban Li Hian of Singapore, who got this message while trying to open the game *Ruckus* from the MACFORMAT 46 Cover CD. (She's got her Mac set to *those* colours and she's surprised the *Mac* is melodramatic?) If you send us a Silly Message, give us as much detail as you can about what you were doing when it happened!

you want to buy a new Mac, you should have no shortage of choice. Or could you upgrade your present Mac and get more useful life out of it? Don't miss our comprehensive guide to all the upgrade options for every Mac model next issue.

Small business software

John Nicholls (AppleTalk, MACFORMAT 49) need not despair: there are still some publishers producing reasonably-priced software for the Mac! Instead of making to do with a US accounting package, he might like to try *MYOB*, a fully-fledged small business accounts package for the Mac available from most mail order and catalogue resellers for around £165.

MYOB is a proper double-entry, three-ledger UK business accounts system that your accountant, the taxman and VATman will all approve of. But all the accounting jargon is hidden away, so it's ideal for anyone who prefers to spend their time running their business rather than doing the books.

I have to admit that *MYOB* is also available in a Windows version, with exactly the same feature set. But there are more than enough Mac users out there to make it sound business sense for us to develop and support good, low-priced Macintosh software. I can't see that changing in the foreseeable future.

Roger Bilder
Best!Ware (UK) Ltd
Ivybridge, Devon

*Watch for a review of **MYOB 6** soon.*

Bombing run

In MACFORMAT 49, Tim Young complains about *A-10 Cuba* missions being set in a real country. I do not really think it matters where the scenario takes place. It is after all just a computer game. I recently acquired, on a compilation CD, *Bomber*, which is about bombing Germany, and there are games in which enemy bombers try and take out targets in the British Isles. I realise all that is past history but still think folks are losing track of the fact that it is a game. I'm sure that someone could think of a reason why we should not use *any* particular country as a fictional theatre of war, and that would be the end of the majority of flight sims as we know them. Don't take it too seriously!

Barrie Myers
via FutureNet

Any more views? Write to "Not Here You Don't" at the address opposite. **MF**

Get more from ClarisWorks

In the charts When you've created a chart in the spreadsheet module, you can give any text on the graph a drop shadow by clicking on the text in question while holding down **[command]**. Clicking the legend with **[option]** pressed down stretches the graph to fit the full width of the box.

You can change the colour and style of lines or points plotted on a graph by clicking its colour box in the legend so that a small circle is placed in the colour box. Then choose a colour or pattern from the usual tools on the left toolbar.

And remember, *ClarisWorks* is one program that fully supports keyboard equivalents for buttons in dialogue boxes, which can be faster if your hands are nearer the keyboard than the mouse – generally it's **[command]** plus the first letter of the option you want. (Hold down the **[command]** key for a while and the equivalents get displayed for you.)
David Rowbory, Glasgow, via FutureNet

Creating a Read Me file In MACFORMAT 41 you published a solution to David Knipe's question about creating *SimpleText* files with pictures in them, involving *ResEdit*. There's an easier way using *ClarisWorks*. You need to get hold of the **TeachText/SimpleText XTND** file and place it in the **Translators** folder in the **Claris** folder inside your System Folder. Create your word processor document as normal, pasting PICT graphics into it, then, when you save, simply choose **TeachText & SimpleText Read only** from the Format pop-up menu. *ResEdit* can be dangerous, so I think it's better to use alternative methods.
Esa Niemelä, Helsinki, Finland
via FutureNet

We'll include the XTND file on our Cover CD as soon as possible. Oh, and because Nisus uses Claris's XTND system, you can use this technique with that program too.

Make a note In response to a previous letter asking how to use symbols instead of numbers for footnotes, choose **Document** from the **Format** menu and turn off automatic numbering. Then when you insert a footnote you'll get a dialogue box asking what symbol you wish to mark it with. Easy. And I found this in the on-line manual, which I find superior to the paper book.

The only thing I would like added to *ClarisWorks* is the ability to mail merge multiple records from one database, onto one page. Perhaps there is a way, but I haven't found it yet. Any ideas?
David J Wright, Sheffield, via FutureNet

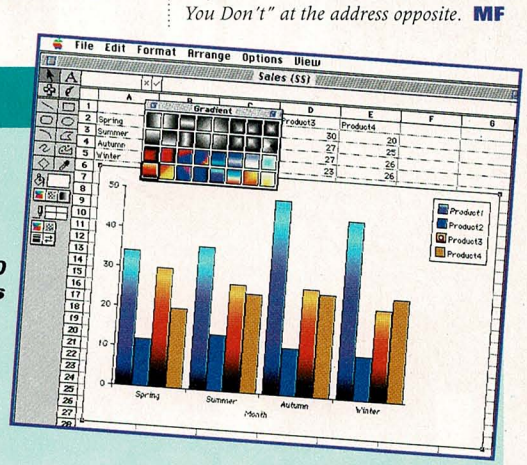
And on the subject of mail merging…

Mailmerge glitch I have used *ClarisWorks* from the day I bought my first Mac, to help run my business, and have used most versions. However, when using the mail merge facility in v4 I have come across a serious glitch. Although it's easier to use than previous versions, you used to be able to slide the fields up and across, thus avoiding the unsightly gaps which are now present with v4.

To get around the problem, you have to save your database files in a format, such as **SYLK**, that can be read by an earlier version. Reopen that file with your old version, making sure to select Document type as **Database**.

I recommend that if you're interested in upgrading or purchasing *ClarisWorks 4* and require the mail merge facility, you should delay your purchase until a fix is available freely on the Internet.
Paul Batty, via FutureNet

Anyone else got any tips for **ClarisWorks**? Write to "ClarisWorking smarter, not harder" at the address opposite! And watch for more ideas for getting more from **Works** next issue.



Improve your *ClarisWorks* charts by customising lines or bars using the formatting tools on the toolbar.

The candle came before the lightbulb

The bicycle came before the car

The Apple Macintosh

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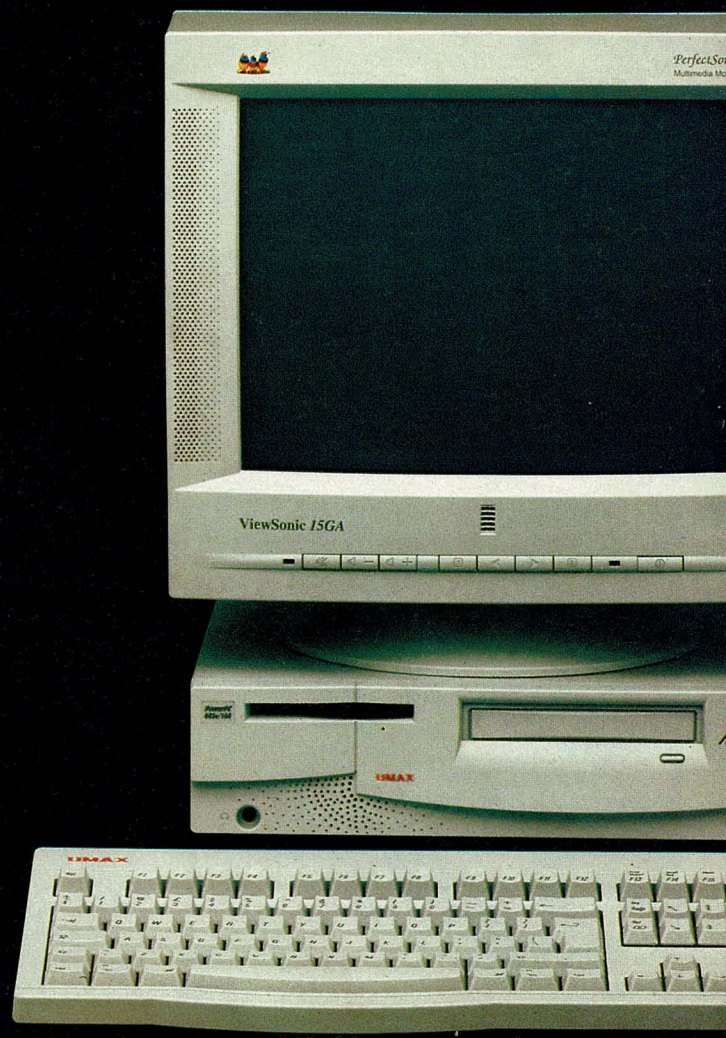

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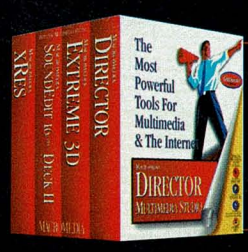

Latest version of Macromedia Director Multimedia Studio 2 only £499 (£587 inc VAT) when purchased with any UMAX product. This offer ends April 30th 1997.

UMAX

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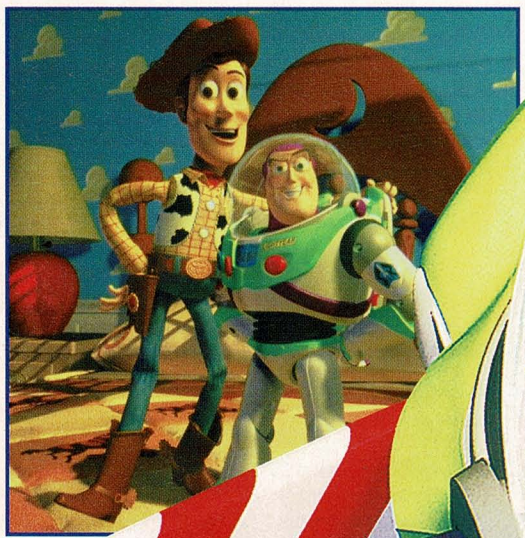
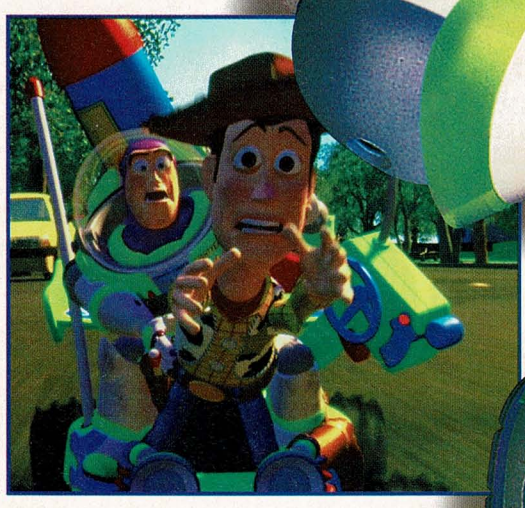
Buzz and





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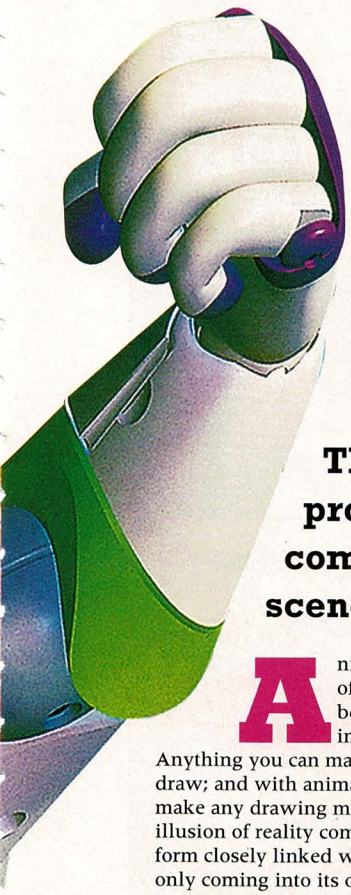


beyond

The Mac's at the heart of a revolution in animation, as pro's and amateurs alike discover the flexibility that computers offer. MACFORMAT looks at today's animation scene, from the cutting edge to low-cost shareware.

Animation is the art of making you believe that the impossible is real. Anything you can make up, you can draw; and with animation you can make any drawing move, making the illusion of reality complete. It's an art-form closely linked with technology, only coming into its own with the invention of the movie camera. Computers like the Mac are enabling animators to break away from the traditional, painstaking technique of drawing out a sequence moment by moment. Your Mac can speed up and automate this process, known as cel animation; but now today's technology is having an even more profound effect on the art.

The smash hit movie *Toy Story* is simply the most visible part of the growing phenomenon of 3D animation. It's the culmination of Pixar's work through the last ten years, such as the famous *Luxo Junior* short film which brought angle-poise lamps (of all things) to life. 3D cartoons make the illusion of reality even more complete, and the best practitioners make imagined forms so real that you can't tell the difference. Creatures like the ones you see in the remodelled *Stars Wars Trilogy* can't exist, yet you'll see them growling at human passers-by as if they were real.

You're also free to use any style you like, not just ultra-realism. *Toy Story* offers a design sense as stylised as any painting or drawing, but you're absorbed by the wholeness of it within minutes. And the Mac is becoming an important way of viewing animation as well, as new media like CD-ROM and the Web take their place alongside film and TV.

Over the next 15 pages, we look at the finest computer animated work being released today, with pro animators taking delight in using a huge variety of styles in their work, releasing their ideas across old and new media.

Then we'll see how you can play a part: you'll discover the huge range of animation software available on the Mac right now, whatever project you have in mind. And we'll show you the tricks of the trade, as you start to produce your own animation with the software we've included on our Cover CD.

A moving tale

State of the art 31
The firms at the cutting edge of animation today.

Name that toon 36
Which animation software is right for your needs?

The Simpsons Cartoon Studio 40
Fox's animation studio package for kids makes creating cartoons simple.

Create a cartoon 44
We show you how to exploit *Painter's* animation features.

Get animated! 46
Cartoonist Phil Elliott shows you how he brings his creation Jonni Starr to life on every Cover CD.

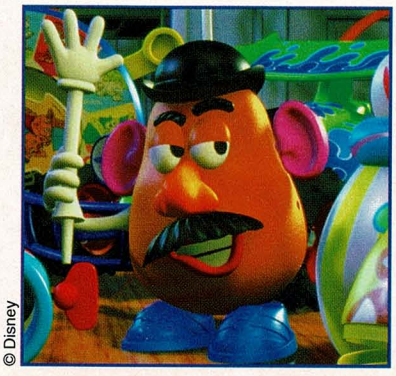
Toy Story

Pixar's *Toy Story* was released in 1995 by Disney, but it's still the most ambitious use of computer animation to date, using 3D modelling and rendering to create a world that's totally convincing for over an hour and 20 minutes. The whole production process follows the same route as you use to create 3D animation on your Mac: you create models, add lighting and textural information, then render each frame according to those settings.

Pixar used *RenderMan*, a program of its own creation, for the key rendering process. *RenderMan* is available on the Mac, as well as on powerful Unix workstations. In fact, it is built into the NextStep operating system (the OS on which Apple is basing Rhapsody, the forthcoming successor to the Mac OS), which means it could also be integrated into the Rhapsody OS if Apple decides to approach Pixar for a licence.

This doesn't mean that every Power-Mac would be capable of creating *Toy Story:* the film was a massive project involving over 100 multi-processor computer workstations, with every one of the 110,000 frames in the film taking between one and three hours to render. Pixar created over 400 models and 2,000 different textures to apply onto the models. Every professional computer animation project is subject to a budget, and even Pixar had to balance paying for the use of this equipment with the time it needed to produce the detail it wanted.

Turn the page to see how other companies are using computers to create animation effects for the digital age... ➤



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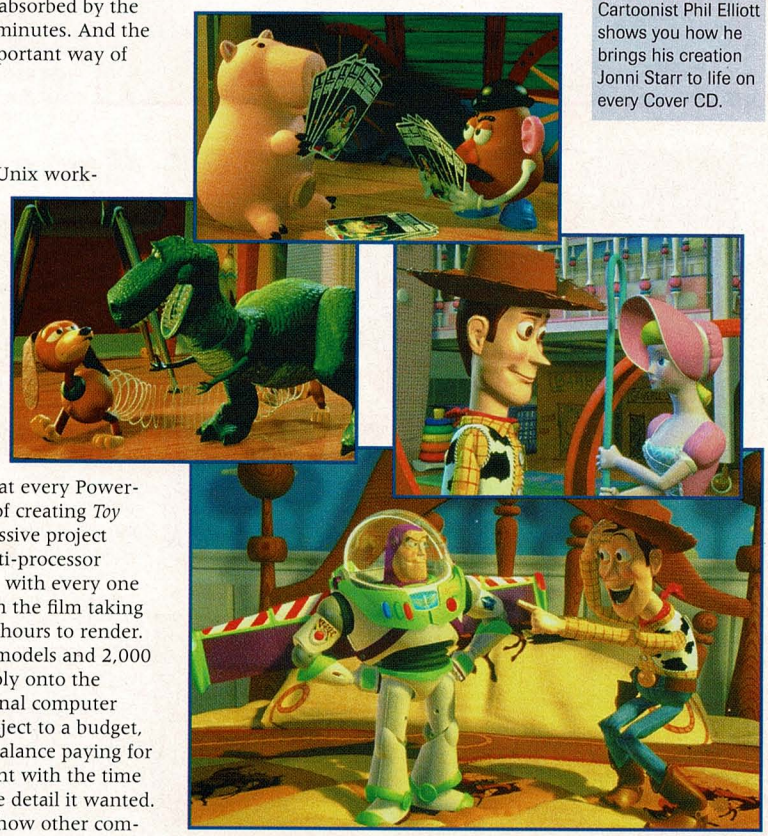
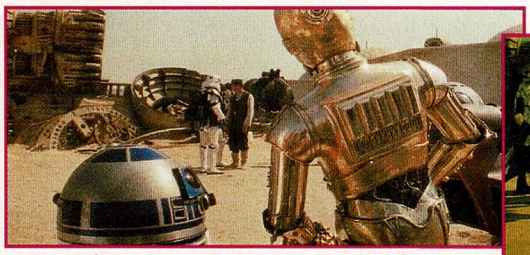
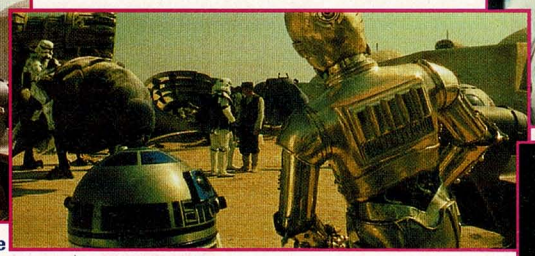


Pixar created over 70 characters and more than 110,000 frames in the most ambitious computer animation project so far – *Toy Story.*



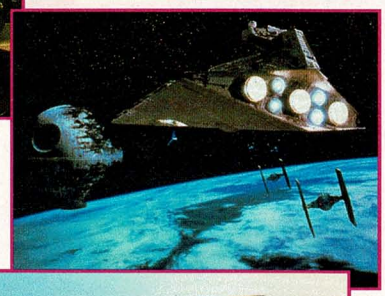


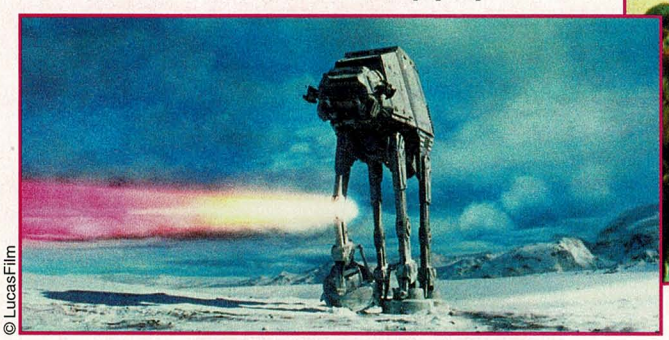
Before and after: LucasFilm's special effects arm took the original 1977 version of *Star Wars* (above left) and used today's technology to update scenes (above right).

Star Wars Special Edition

The revamped reissue of the *Star Wars* film trilogy is breaking box office records all over again, 20 years after the first *Star Wars* movie came out. LucasFilm used the occasion of the re-release to go back over the 1970s footage, using today's computer technology to add in extra creatures and other details. The production team used Macs and Silicon Graphics machines to create new animated creatures, with shading and detail designed to blend seamlessly with the existing live action material.

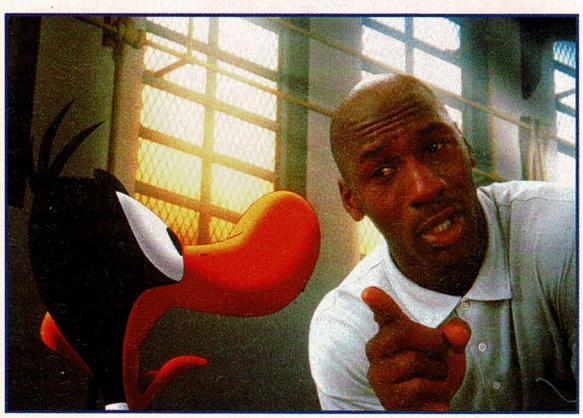
Now the Mos Eisley spaceport scenes are crammed with fresh incident that enriches the world of the film, including Imperial stormtroopers and their bad-tempered mounts. Meanwhile, a previously-cut scene with Han Solo and his antagonist Jabba the Hut has been reinstated, using a brand-new computer-made Jabba.





From minute cleaning-up of the footage to brand-new scenes and computer-made characters and objects, the *Star Wars Trilogy* has been thoroughly revamped.

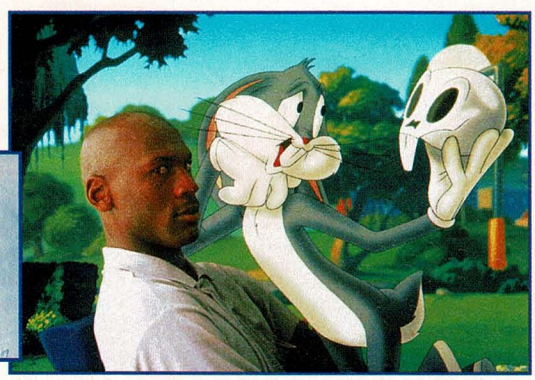
© LucasFilm

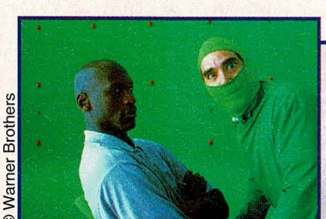


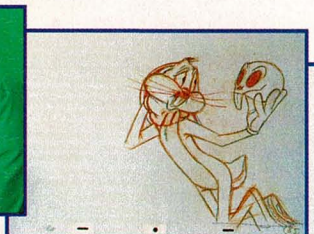
Space Jam

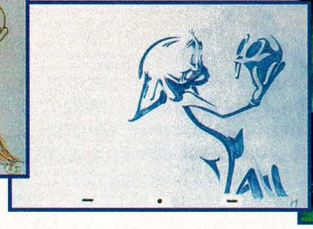
Despite the shaded look and use of computers, *Space Jam* is still very much in the tradition of 2D-based cel animation, rather than the full 3D modelling of *Toy Story*. The task for animation house Uli Meyer Features and effects studio Cinesite in this hit movie was to make you believe that basketball star Michael Jordan and cartoon legend Bugs Bunny could meet. They started by shooting Jordan against a green background, a colour that can be easily eliminated during post-production. An actor represented Bugs so that Jordan had someone to interact with during filming.

Uli Meyer's animation team then produced hundreds of hand-drawn images of Bugs, matching his actions with Jordan's frame-by-frame. The team also needed to produce separate drawings to indicate light and shade for each frame. If you look at the famous *Looney Tunes* cartoons of the 1940s, you won't see such three-dimensional lighting, but if *Space Jam's* plot was to work, it was crucial to make Jordan and Bugs look part of the same world. Roger Rabbit, eat your heart out!



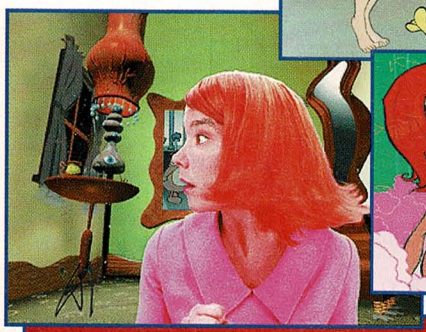


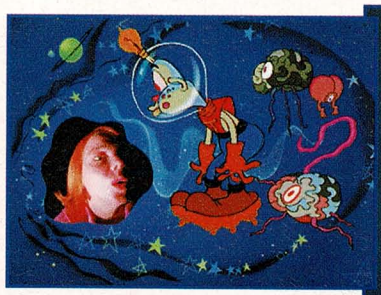




Three separate elements had to be blended together for each moment of the combination live action/animation hit *Space Jam.*

© Warner Brothers





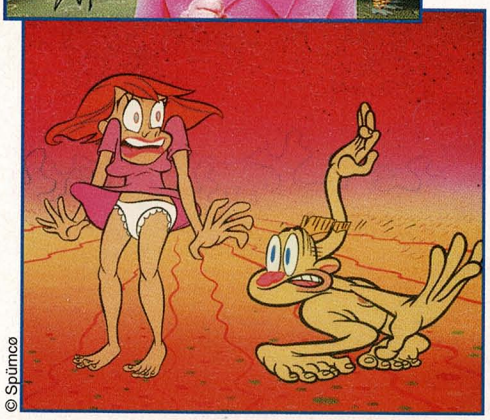
I Miss You

Animation house Spümcø has quickly acquired a reputation for groundbreaking and original work – most famously the first series of TV cartoon *Ren and Stimpy*. Spümcø uses the latest Macs to produce its material, but retains the verve and look of traditional hand-drawn cartoons.

Asked to produce the video for Björk's most recent single, "I Miss You", Spümcø was able to cut loose – both in a design sense and in a technical sense. The video mixes video footage of the singer herself in with both traditional cel-style animation and also the new direction of 3D modelling.

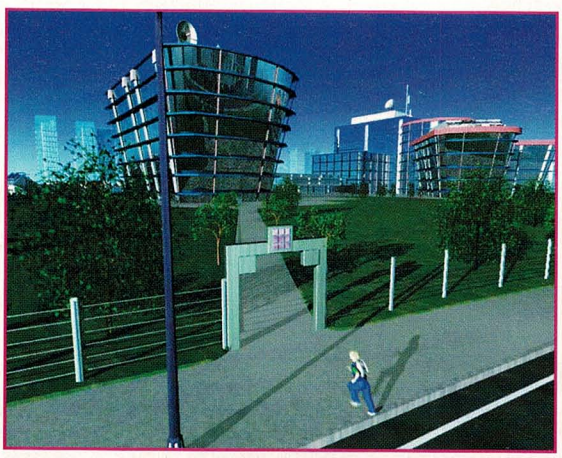
Feeding off Björk's highly individual personality, Spümcø's created some memorable, sexually-charged visuals, causing some TV stations to insist on showing only an edited version of the video.

Creating effects like Björk appearing through the space warp (above left) required some careful planning-out of animation beforehand (above).



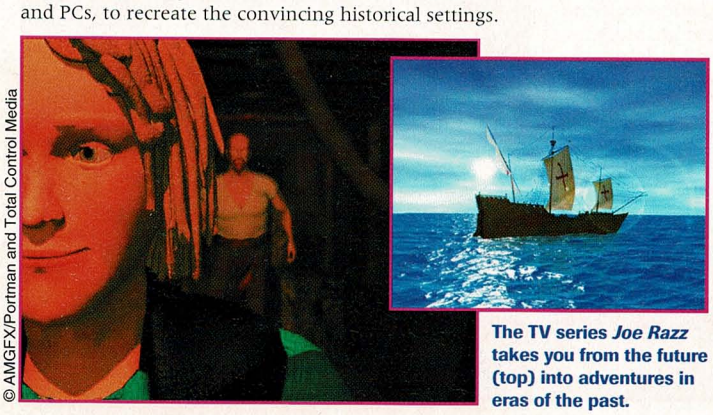
© Spümcø

Spümcø's video interpretation of Björk's "I Miss You" has raised plenty of eyebrows; it's a wild mixture of styles and ideas.



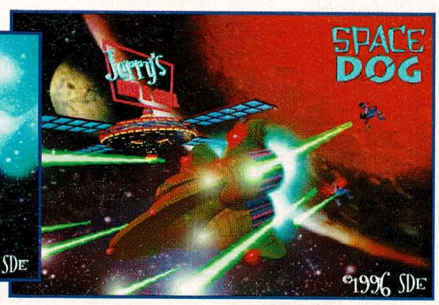
Joe Razz

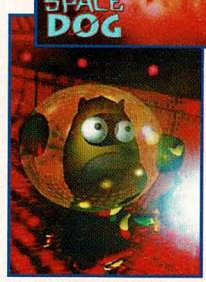
Currently in production from AMGFX, *Joe Razz* is a children's time travel adventure for TV, taking you to different eras and civilisations. AMGFX is using the powerful 3D program *LightWave*, installed on a network of Macs and PCs, to recreate the convincing historical settings.



© AMGFX/Portman and Total Control Media

The TV series *Joe Razz* takes you from the future (top) into adventures in eras of the past.





Spacedog

Spacedog is a charming animated series with a difference: it's being "broadcast" over the World Wide Web rather than through TV. Spacedog enjoys his galactic adventures across sequences full of delightful 3D animation, which are then converted into QuickTime video clips for you to download. Catch the latest episode at **http://www.spacedog.org/**

Adventures for all the family – but you can only catch episodes of *Spacedog* on the Web.

© Spacedog Enterprises

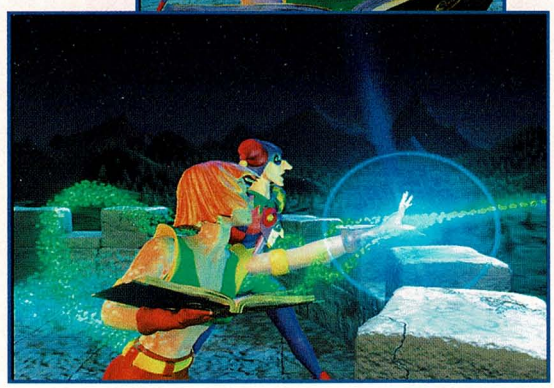
Nikki and Fargus land in a whole lot of trouble by playing with magic in the stunning introduction to BMG Interactive's *Pandemonium* video game.

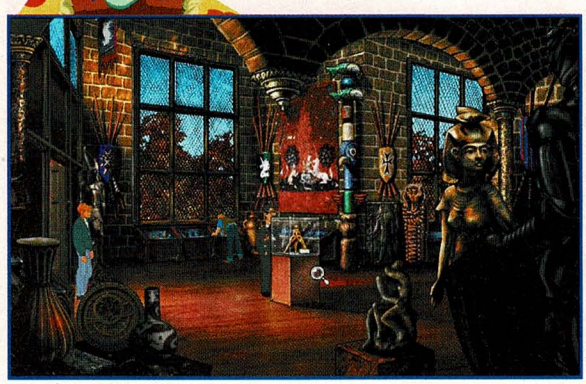
© Crystal Dynamics

Pandemonium

Crystal Dynamics' work for its video game *Pandemonium* is a lovely example of how 3D animation has moved from being reserved for high-profile projects like *Toy Story* to becoming a implement in every animator's toolbox.

Pandemonium's gorgeous animated introduction shows how lead characters Nikki and Fargus get themselves into trouble by casting spells when they shouldn't. Crystal Dynamics pulls off the difficult feat of making their computer-generated people move just like real human beings.

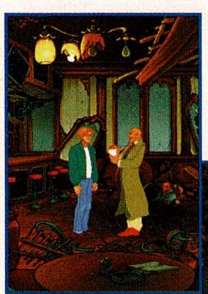


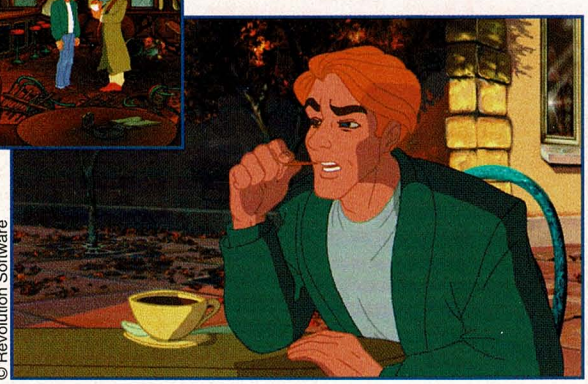


An American in Paris: Revolution used the advanced NextStep system lovingly to recreate a traditional cel animation style.

Broken Sword

Coming to the Mac shortly, *Broken Sword* recreates the look of a traditional cel-animated film but enables you to control the action. The UK games developer Revolution Software used the *Cambridge Animation System*, a software suite which runs on the NextStep operating system that Apple bought late last year. When Apple's new NextStep-based Rhapsody OS appears next year, it should immediately be capable of producing results like these.





© Revolution Software

ON THE CD

Last Express preview in the **Demos** folder

The Last Express

Coming soon from Brøderbund, *The Last Express* is the new game from Jordan Mechner, the man behind the classic *Prince of Persia* titles. The game takes you back to 1914, where the tense political atmosphere in Europe at the time spills into an eventful train journey of mystery and intrigue.

Mechner and his production team Smoking Car filmed the actors playing the various characters, ready to be placed in the computer-generated environment of the train where the adventure unfolds. Rather than using the video footage in the game, though, they opted to convert it to animation using the rotoscope technique, where animators draw over filmed actors to create a hand-drawn, subtly altered look.

The idea is actually make you feel more involved with the game – Smoking Car felt that live video would prove too distracting while you were playing through the involved plot. The decision also gave the designers a chance to animate their characters in an Art Nouveau style perfectly suited to the era.

For more on the making of *The Last Express*, take a look at the preview on our Cover CD.

© Smoking Car Productions

High adventure is captured through a mixture of styles in Jordan Mechner's *The Last Express.*

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Name that toon

With animation programs for a wide range of purposes – and at a wide range of prices – on the Mac, which one is right for you? Richard Hill helps you narrow down your options.

ON THE CD
Working demos in the **Animation** folder.

Computers and animation used to live separate lives: you might produce your work on a computer, but it would still only ever appear on more established media like film and TV. The growth of computer media like CD-ROM and the Internet, though, means that you can now produce material on the Mac for the Mac.

You don't have to get a job in a studio and work through the complex system of production companies and broadcasters to get your work seen, nor do you have to invest five- or six-figure sums in equipment. With anyone able to produce worthwhile material and have it seen by a wide audience, a wide variety of animation software has sprung up.

Over the next few pages we look at traditional cel animators and the new 3D animators, along with Web and morphing software that's ideal for creating work intended for the Internet.

Cel animators

If asked to describe how animation is produced, most people would still tell you about the laborious craft of traditional cel animation – hand-painting snapshots of character movements onto thousands of acetate cels, which are then placed over a background one at a time to be filmed. While the principle remains the same, animators today get that trademark flat-look cartoon style with the help of computers like the Mac.

Cel animation packages are typically easy to learn, and you'll have no trouble finding programs that work on older Macs as well as on the newest PowerMac.

Onion skins

Onion skinning is an old animator's trick, using drawings on thin sheets of paper (like tracing paper) to overlay successive frames to make sure characters are moving the way you want them to.

Kinematics

Inverse Kinematics is a sophisticated technique for "linking" related objects, such as parts of the body, in such a way that they move more naturally in concert with one another.

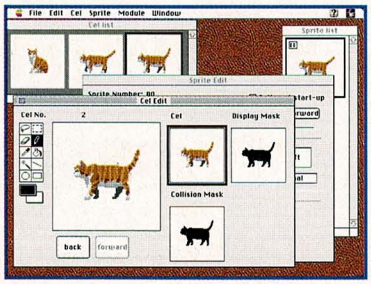
ScreenStudio

ON THE CD
Price: around £45
Contact: Feral Entertainment on 01225 448069
Requires: 68030 processor or PowerMac, 8Mb RAM, System 7.1, 256-colour monitor, CD-ROM drive, optional copy of *After Dark 2.0* or later for creating screen saver modules

Feral Entertainment's first Mac program is a low-cost package for creating cel-style animation sequences you can use in a variety of ways: you can save sequences as stand-alone movies or as modules for use with Berkeley's *After Dark* screen saver (we revealed version 4.0 in MACFORMAT 50). Feral expects *ScreenStudio* to go on sale in June, but you'll find an exclusive demo preview on this issue's Cover CD.

You only need to follow a few simple steps to create an animation in *ScreenStudio:* first make individually drawn cels, then collect these to make a "sprite" that carries out the action you have drawn. You can also link sprites so that one responds to the action of another, creating a simple storyline, and add a PICT image file to create a background.

Try out the demo by loading in some of the sample cels and sprites, then try drawing your own cels using the basic drawing tools provided. You can use any image editing program to create frames, then bring them into *ScreenStudio* to turn them into sprites. There are controls for adding sounds, including the ability to time sound effects to coincide with sprites appearing on screen.



Set for release in June, *ScreenStudio* offers all the tools you need to get started in cel animation for just £45.

PROmotion

ON THE CD
Price: £149
Contact: Gomark on 0171 731 7930
Web: http://www.mwg.com/
Requires: 68000 processor or PowerMac, 6Mb RAM (8Mb if working in colour), System 6.0.7

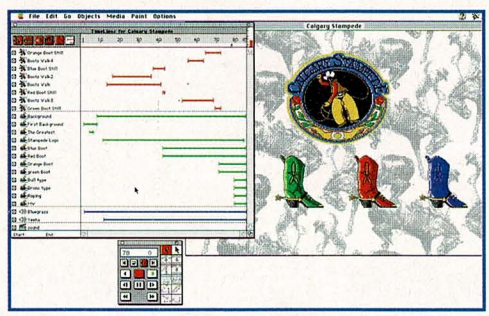
Already established as a basic cel editor, *PROmotion* enables you to build sequences of cel animations, then save them as QuickTime movies or *After Dark* modules. You can set the program to create all the frames between the key frames you've nominated, or use onion skinning to check your progress as you draw characters. *PROmotion* also includes tools for recording and editing sound effects.

Painter

ON THE CD
Price: £492
Contact: Principal on 01756 704000
Web: http://www.fractal.com/
Requires: 68040 processor or PowerMac, 8Mb RAM, System 7, 256-colour monitor, CD-ROM drive

Painter's a versatile beast: while it's best known for its image-editing features and its ability to create natural-looking line and texture, it also has decent animation tools. It's easy to set up a series of frames and paint into them with any of the tools available. You can even use an onion skin feature to compare consecutive frames. Try *Painter 4.0's* animation tools for yourself with our Cover CD demo – see page 44 for a step-by-step guide.

Painter 5, due this summer, will add Web animation tools, enabling you to create GIF animations that any current Web browser will be able to display. Unlike *Painter 4.0*, though, the new version will work only on PowerMacs.



***PROmotion* has sophisticated options like a time-line for planning out sprite movements and sound effects.**

The Animation Stand

ON THE CD
Price: From $5,000 (£3,030)
Contact: Linker Systems in the US on 00 1 714 552 6985
Web: http://www.linker.com/
Requires: 68020 processor with FPU and 2Mb RAM and System 7.5, or PowerMac with 8Mb RAM and System 7.5.2, 256-colour monitor

Many professional animators, including artists at Disney and Warner Brothers, use Linker Systems' *Animation Stand*, a comprehensive package designed to replicate the tools and techniques old hands rely on, while offering all the advantages of the Mac. On top of the cel painting features, *TAS* offers camera controls capable of multi-plane shots (making either the background or foreground out of focus to add depth).

You'll find a variety of output options tailor-made for using your Mac within a professional studio environment, while optional extras give you more control over your ink and paint tools or quickly enable you to produce animation tests based on your rough sketches.

3D animators

Most people in the creative industry would argue that 3D is the future of animation; it's certainly the technique most able to convince a viewer that the scene is real, through the use of texture and lighting calculated by today's high-speed processors. Choosing to produce 3D on your Mac will certainly give you the widest range of software options, with a split between general 3D suites that offer animation features and the more specialist tools.

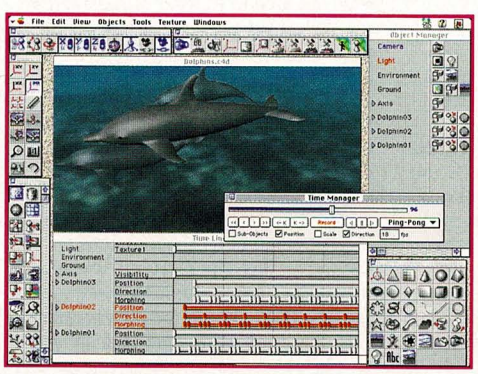
For the time being, 3D animation makes the most demands on your time, design skills and equipment. You'll need a fast Mac with a Floating Point Unit (a Quadra, for example) or, preferably, a PowerMac to get the most professional results. As Macs gets faster, though, publishers are more able to create software that you'll find much easier to use than traditional 3D packages. "Tweening", for example, means you only have to design key moments in your sequence, leaving your Mac to extrapolate the intermediate movements and render the in-between frames automatically.

Cinema 4D

Price: £699
Contact: HiSoft on 0500 223660
Web: http://www.cinema4d.com/
Requires: PowerMac only, 16Mb RAM, System 7, 256-colour monitor, CD-ROM drive

Maxon's fast and compact 3D system (rated a Classic 93% last issue) offers video-style controls to record the progression of objects within your scene. *Cinema 4D* will work out intermediate frames between your key moments, and enables you to adjust lighting, camera angles and more through a simple timeline tool.

Cinema 4D's ability to use Inverse Kinematics settings means that you can link separate objects to form a group object, then have them move as one during a sequence. This is useful for creating realistic human character movement. You can even treat a finished animation or movie as a texture, placing it onto an object in a new animation project.



With *Cinema 4D*, you can group objects together, making this school of dolphins move as one.

Infini-D

Price: £763
Contact: Gomark on 0171 731 7930
Web: http://www.specular.com/
Requires: PowerMac only, 24Mb RAM, System 7, 256-colour monitor, CD-ROM drive

As well as its innovative blend of 3D and broadcast-quality video effects (see "What's New" last issue), *Infini-D 4* offers powerful animation tools. It's easier to set up animation sequences thanks to the redesigned interface, and so place lighting and cameras with more flexibility. New tools include a particle animator, which enables you to create effects like fireworks exploding or sand blowing in the wind, giving hundreds of particles similar properties and accelerating them as they move. There's also a set of morphing tools for distorting objects.

Ray Dream Studio

Price: £492
Contact: Principal on 01756 704000
Web: http://www.fractal.com/
Requires: 68040 processor or PowerMac, 16Mb RAM, System 7, 256-colour monitor

Ray Dream Studio is a versatile and affordable 3D suite. Animation features include a timeline palette for adjusting lighting, camera angles and key frames. It also uses Inverse Kinematics for convincing character actions, and a rotoscoping tool enables you to use QuickTime movies within animation sequences – as a backdrop, for instance, or for tracing live action. Also available are tweening features and predefined behaviour patterns for objects, such as bouncing and spinning.

Extreme 3D

Price: £558
Contact: Computers Unlimited on 0181 357 5758
Web: http://www.macromedia.com/
Requires: 68040 processor or PowerMac, 16Mb RAM, System 7.1, 256-colour monitor, CD-ROM drive

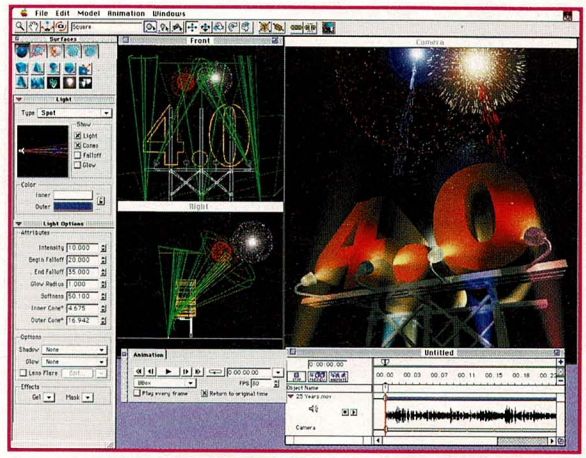
Macromedia's 3D suite enables you to model, render and animate scenes and models. The recently-released *Extreme 3D 2* includes powerful new animation tools, such as the ability to create particle animations like smoke and bubbles.

Strata StudioPro

Price: £1,169
Contact: Principal on 01756 704000
Web: http://www.strata3d.com/
Requires: PowerMac only, 16Mb RAM, System 7, 256-colour monitor

Completely revamped from the earlier *StudioPro Blitz*, *Strata StudioPro 2* merges its animation controls into its main modelling functions, enabling you to animate complex actions easily.

There is also a selection of new camera attributes to choose from, including depth of field controls to decrease focus in the foreground, for example, as well as complete pan and zoom.



***Infini-D 4.0* gives you particle effects you can use to reproduce the feel of effects as varied as fireworks, dust and water droplets.**

ElectricImage

ON THE CD

Price: £2,932
Contact: Gomark on 0171 731 7930
Web: http://www.electricimage.com/
Requires: PowerMac only, 32Mb RAM, System 7.5, 256-colour monitor

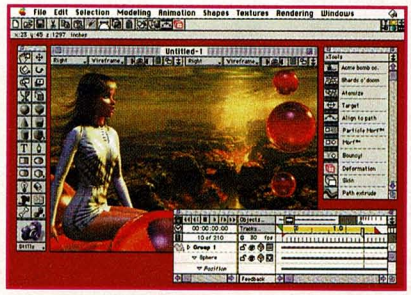
ElectricImage is designed for big-budget projects – LucasFilm used it to produce some of the new material in the recent *Star Wars Special Edition*, for example. It offers precise control over the features you'd expect to find, such as Inverse Kinematics, but offers many other high-power options.

The program can use Bio Vision motion capture data to present ultra-realistic movement, for example, and can use multi-processor Macs to render your sequences in immaculate detail.

LightWave 3D

Price: £1,169
Contact: AMGFX on 0171 468 3444
Web: http://www.newtek.com/
Requires: PowerMac only, 16Mb RAM, System 7.5.3, 256-colour monitor, CD-ROM drive

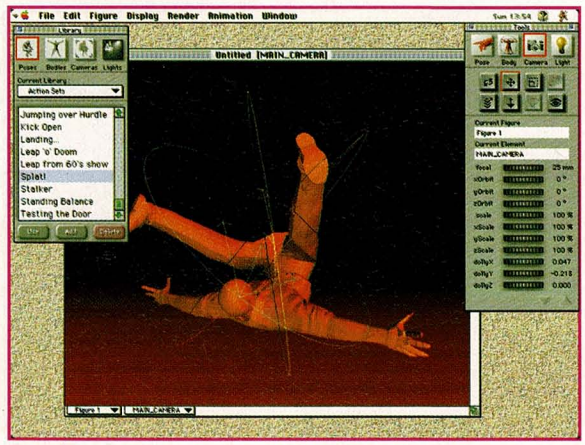
This powerful animation package has long been an industry favourite on powerful computers like Silicon Graphics and Video Toaster systems, and now ➤



***Strata StudioPro* gives you powerful depth-of-field features, enabling you to create a sense of depth by placing the background out of focus, for example.**

3D survey

For an overview of the 3D graphics field, check out our "State of the Arts" graphics software survey in MACFORMAT 47. If you missed that issue, turn to page 142 for details of our back issues and fax-back services.



***Poser 2* is designed to help you create convincing human movement effects you'd normally need expert knowledge to create.**

it's come to the PowerMac. Find out how it fares in our review on page 80.

Presenter 3D

Price: £1,469
Contact: MGA on 01993 823805
Web: http://erehwon.caltech.edu/vidi/
Requires: 68040 processor with FPU or PowerMac, 16Mb RAM, System 7, 256-colour monitor

This professional level 3D suite offers many ingenious features for adding extra sparkle to your animation, using the Mac version of *RenderMan* to create its images. It adopts the metaphor of a virtual studio, giving you a stage to set up your shots and a control room where you can view the action through any of the cameras you've set up. It also enables you to use 3D sound, so your viewers will feel like the animation is enveloping them.

Martin Hash's 3D Animation

Price: £217
Contact: Art Electric on 0166 825290
Web: http://www.hash.com/
Requires: PowerMac only, 16Mb RAM, System 7.1.2, 256-colour monitor, CD-ROM drive

Made specially for character animation, *MH3D* has a powerful Inverse Kinematics tool for realistic motion, plus libraries where you can store character designs or movements you'd like to reuse. The CD-ROM includes ready-made characters, plus props and textures including skin.

Animation Master

Price: £704
Contact: Art Electric on 0166 825290
Web: http://www.hash.com/
Requires: PowerMac only, 16Mb RAM, System 7.1.2, 256-colour monitor, CD-ROM drive

The pro version of *MH3D, Animation Master* adds a sophisticated multi-plane camera with built-in depth of field and colour controls. If you have access to several Macs in a studio setting, you can use *Animation Master* to link them and share the rendering work between them.

Poser 2

Price: £222
Contact: Principal on 01756 704000
Web: http://www.fractal.com/
Requires: 68040 processor with FPU or PowerMac, 12Mb RAM, System 7.5, 256-colour monitor, CD-ROM

Fractal's *Poser 2* is a specialist illustrator's tool for creating realistic human figures, using the predefined 3D information built into the program. The program enables you to animate its figures as well as creating single images, and includes ready-made sequences for common actions like walking and jumping. (See our review last issue.)

LogoMotion

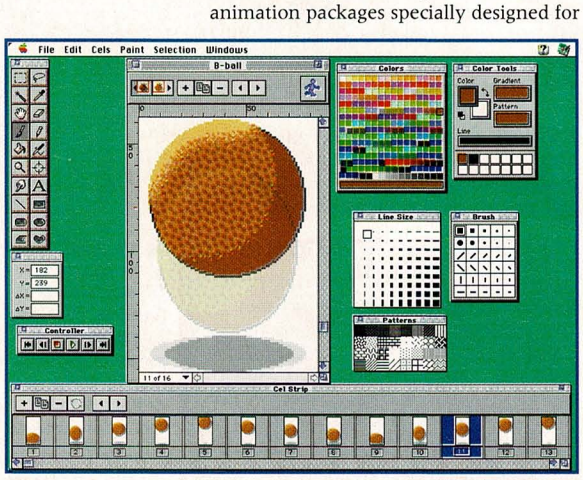
Price: £120
Contact: Gomark on 0171 731 7930
Web: http://www.specular.com/
Requires: 68040 processor with FPU or PowerMac, 8Mb RAM, System 7, 256-colour monitor

Using *LogoMotion*, another specialist tool, it's easy to create animated logo or text sequences with features including the ability to use your Mac's fonts, an animation timeline and morphing tools. *LogoMotion* also includes 500 StageHands, ready-made camera settings, textures and objects, many of which are already animated ready for you to use.

Web animators

The World Wide Web (WWW) is rapidly becoming an alternative broadcast medium full of video and animation, although it's still a long way from the pervasiveness of TV. There are several ways of creating animation for the Web: any modern Web browser can display animated GIF files, for example, while the Java programming language offers you a more complex but flexible alternative.

Now, though, a new generation of animation packages specially designed for the Web is appearing. The makers aim to give you a more relevant choice of tools, while attempting to solve the challenge of creating animation files that are small enough to be sent over the Web but impressive enough to keep you coming back for more.



***WebPainter* is part of a new generation of cel animation packages specially made for creating compact Web graphics.**

WebPainter

Price: $99 (£60)
Contact: Totally Hip Software in Canada on 00 1 604 685 6525
Web: http://www.totallyhip.com/
Requires: 68040 processor or PowerMac, 4Mb RAM, System 7, 256-colour monitor, CD-ROM drive.

Fast gathering a strong reputation, *WebPainter 1.0* enables you to create compact animations for your Web page quickly and easily. Most people will use it to make simple logos and Web banners (like the adverts you see on many pages). You can save sequences as animated GIFs or as files that Web browsers can read with the help of Totally Hip's *Sizzler* plug-in. The company says that although you have to download an extra (free) program to use with your browser, the effort is repaid with better quality visuals that load into your Web page more quickly than animated GIFs.

The company is currently working on *WebPainter 2.0*, a summer release which will add features like onion skinning and the ability to view all the frames you've made as a strip. Totally Hip is also revamping the interface to make the program easier to use and adding useful tools such as a Zoom facility.

Flash

Price: £235
Contact: Computers Unlimited on 0181 357 5758
Web: http://www.macromedia.com/
Requires: 68040 processor or PowerMac, 8Mb RAM, System 7.5, 256-colour monitor

Based on a system developed by FutureWave Software, *Flash 2* appears this month. Designed to create animations small enough to transfer quickly across the Web, *Flash* uses vector-based graphics to pull off its results. You'll find vector graphics more typically in drawing programs such as *FreeHand* and *Illustrator;* the files are much more compact over the more photo-realistic bitmap graphics you create in programs such as *Photoshop* and *Painter.*

You'll find some examples of *Flash*-created graphics on the new-look FutureNet Web site at **http://www.futurenet.com/** although you'll need the free *Flash* plug-in for your browser first. The *Flash* editing package enables you to create animations with sound, which are ideal for use as menus or banners in Web pages.

RubberWeb

Price: From $99 (£60)
Contact: RubberFlex in the US on 00 1 719 592 1714
Web: http://www.rubberflex.com/
Requires: 68040 processor or PowerMac, 8Mb RAM, System 7, 256-colour monitor

Flo' is a powerful program for applying convincing warps and distortions to your images, although it's not on sale in the UK. Now *Flo's* developer RubberFlex has extended the technology to a pair of Web animators. The $99 package *RubberWeb* enables you to create animations of images being morphed into different forms, saving the result as a special file that your Web browser can display with the help of the free *AnimaFlex* plug-in.

RubberWeb's stablemate *RubberWeb Composer* costs $299, adding professional features like image layers, a timeline editing facility and more powerful warping tools. It can also use *Photoshop* files, including any layers or transparency effects you created in that program.

Electrifier

Price: From $99 (£60)
Contact: Lari Software in the US on 00 1 919 968 0701
Web: http://www.larisoftware.com/
Requires: PowerMac only, 8Mb RAM, System 7.5, 256-colour monitor.

With *Electrifier*, Lari has become the first company to show the new direction for Apple's QuickDraw GX advanced imaging system. An integrated part of the Mac OS, QuickDraw GX enables your Mac to display and print high-quality graphics and text you can control and distort precisely. Apple has now dropped it as part of its recent restructuring (see News, MACFORMAT 50), but the concept lives on with GX Graphics. Software like *Electrifier* can use this Extension to display GX images without the memory requirements associated with the original GX, and much of the technology is now integrated into the program rather than the Mac OS itself.

The advantage of GX images is that they are vector-based, like the files that Macromedia's *Flash* produces, so your Web browser will download them very quickly. As with other specialist Web animators, there's a free plug-in you have to download before your Web browser can display *Electrifier* graphics, but the firm offers a welcome choice of software to use to create your material. At $99, Lari's new *LightningDraw/WEB* enables you to create basic files, which can use large chunks of the screen to display moving objects and type, and you can also use the $299 sister program *LightningDraw*, a full-scale illustration program based on GX.

***ObjectDancer* uses Apple's QuickDraw GX image system to create small files which download across the Web quickly.**

ObjectDancer

Price: $299 (£180)
Contact: Paceworks in the US on 00 1 415 261 6180
Web: http://www.paceworks.com/
Requires: PowerMac only, 10Mb RAM, System 7.5, 256-colour monitor

ObjectDancer joins *Electrifier* as the second GX-based animation system. It uses a powerful scripting system to bring together the best features of GX Graphics and Apple's QuickTime video playback system. You can change an object's characteristics over the duration of a sequence, for example, making it change colour or become more transparent with a simple command. You can save your finished material as animated GIFs or as a Java applet, opening possibilities for enabling your animation to interact with other Java programs through the Web.

Coming soon

Look out for reviews of *ScreenStudio*, *Painter 5.0* and *Infini-D 4.0* in MACFORMAT as soon as they are released.

Morphing packages

Morphing is a practice exclusive to the computer age. Morphing software enables you to take still images and create a video sequence showing a seamless metamorphosis of one object into the other. Stuff like this was restricted to top-flight production houses and pop videos only a few years ago, but now you can buy the technology for as little as £40. But you need to use morphing carefully and creatively if you want to avoid it becoming a visual cliché.

Morph

ON THE CD

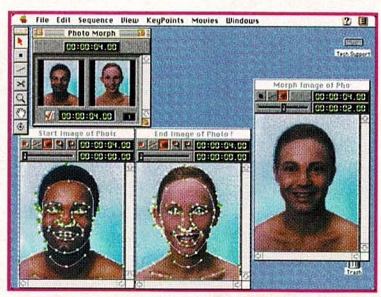
Price: £118
Contact: Softline on 0181 401 1234
Web: http://www.gryphonsw.com/
Requires: 68030 processor or PowerMac, 8Mb RAM, System 7.1, 256-colour monitor, CD-ROM drive

Morph has proven popular with the makers of films including *Bram Stoker's Dracula* and *Robin Hood: Men in Tights*. The program makes it easy to set up precise transitions from one image to another, saving the result as a video sequence. You can nominate points on the starting image, for example, then select a point in the finishing image where each nominated dot should end up.

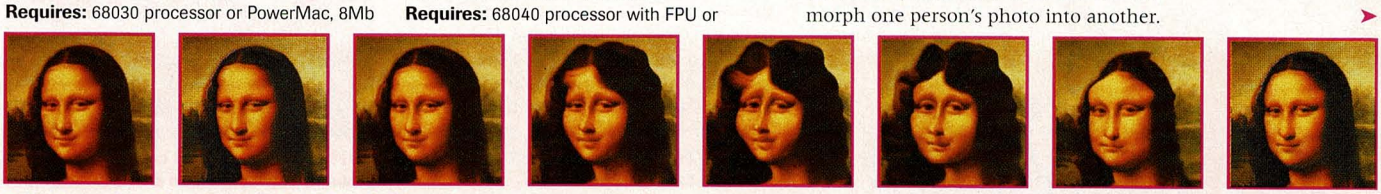
Kai's Power Goo

Price: £40
Contact: Principal on 01756 704000
Web: http://www.metatools.com/
Requires: 68040 processor with FPU or PowerMac, 8Mb RAM, System 7.5, 256-colour monitor, 20Mb hard disk space, CD-ROM drive

Goo offers a variety of features that used to be restricted to professional-level *Photoshop* plug-ins, but it costs just £40 and is easy enough for anyone to pick up. Designed to work especially well with images of faces, *Goo* enables you to stretch and squash parts of a photo. You can save your image onto a strip of frames at any time, then create what MetaTools calls a "Goovie" – an animated sequence of your first pick morphing into the second, then the next... You can also morph one person's photo into another.



***Morph* enables you to create weird hybrid faces using a simple system of mapping points in your original photos.**



***Kai's Power Goo* offers the delightful "Goovie" function among many other images editing tools – create your own morphing movie with ease.**

PRICE	£29.99	**ON SALE**	Now	**CONTACT**	Electronic Arts on 01753 549442	**WEB SITE**	http://www.foxinteractive.com
MAC	**Processor:** 68030 • **RAM:** 8Mb	**POWERMAC**	**Processor:** any • **RAM:** 8Mb	**REQUIRES**	**System:** 7.0.1 • **HD space:** 8Mb (73Mb for full install) •		
Screen: 640 x 480 • **Colours:** 256 • **Extras:** Sound Manager 3.1 (included) • 2x CD-ROM drive • **Age range:** 6 years and older							

The Simpsons Cartoon Studio

Former cartoonist Alex Summersby tries out an animation program aimed at children and wishes he were young again...

ON THE CD

Save-disabled demo in the **Animation** folder

First satellite succumbed. Then the BBC fell before America's favourite dysfunctional family. Now the Simpsons come to your Mac – and not just in a multimedia storybook or a game, but in a full-featured Cartoon Studio, which enables you to create your *own* Simpsons cartoons. As the box says, "Be a big shot cartoon director, man!"

The Simpsons Cartoon Studio is in fact a remarkably powerful animation system, but it is designed to be easy enough for six-year-olds to use. You simply choose a background from the 40-odd available, then place onto it any of 270 props, some of which are themselves animated, then add animated sequences of Bart, Homer, Mr Burns, Krusty and all the Simpsons characters. There's even a range of music loops, sound effects and voice clips to create your own soundtrack.

Don't imagine you're just bolting together some ready-made cartoon clips: you're in charge to an impressive degree. Even the backgrounds aren't entirely predetermined – you can pan up or down (to a limited extent) to vary the perspective you want before you fix one in place. The props and characters are conveniently presented in categories, and you view them ten at a time in palettes that you can scroll through as well as jumping to a new category. (The animated clips come up as thumbnail preview animations too – choose one of the categories of animations and you get ten little Barts, for instance, gyrating and gambolling manically. It's curiously hypnotic, and bizarrely Simpsons-esque.) Select the prop, character or clip you want from the palettes, and click with the mouse to drop it in position. Changed your mind? You can reposition most items by holding down **[shift]** and dragging. (The only elements this doesn't apply to are special effects such as explosions, vertigo-inducing spirals, and so on. But these are mostly full-screen effects anyway.)

Only one of each prop can exist in each frame, and you're limited to 12 props and actors in total per cartoon. But you can add any number of animated sequences of each character – Bart walking, running, jumping, getting electrocuted, whatever – and the only absolute limit is quite a generous 1,200 frames per cartoon (memory permitting). Best of all, when you choose a new clip of an existing character, the figure of that character in the frame currently on-screen becomes a "ghosted" version, analogous to an "onion-skin" version in cel-based animation, enabling you to judge the position of the new one for the most convincing transition. Excellent.

To add an animated sequence, you simply select a likely looking clip from the palettes, move the cursor to where you want the action to begin (holding down **[shift]** to begin the action partly or wholly off-stage), then move the character along with the mouse button held down. (If you want to preview the action first, you can view the clip frame-by-frame by tapping **[control]** instead.) You can't define a "path" for an action to follow, so the smoothness of the movement depends on how dextrous you are with your mouse, but you can determine the duration of the action: all the clips have a beginning, middle and end sequence, and the middle is extended as long as you hold down the mouse button. The end sequence gets added on after you release the button, so getting the timing spot-on (say, synchronising a reaction to an event as it occurs) can be a matter of trial and error, but you can always go back frame by frame if you need to experiment, and there's no denying the flexibility of the system.

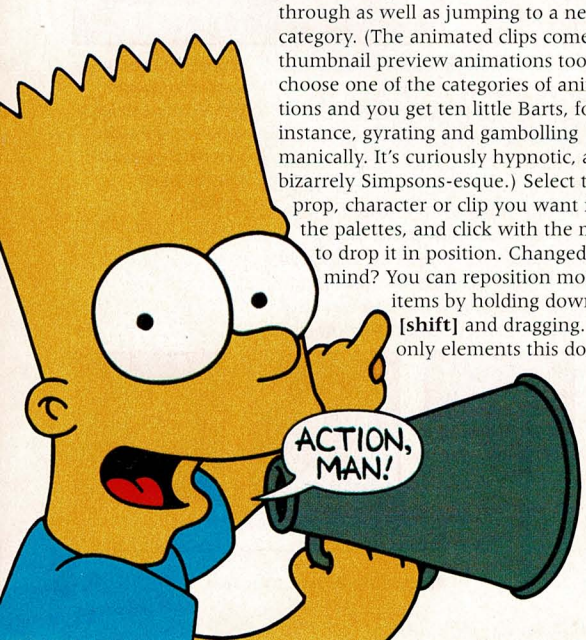
Yes, that's right: go back frame by frame. As you add sequences, your cartoon is automatically extended, and the frame count is displayed at the bottom of the screen (by Krusty on his unicycle, naturally). Here's where you glimpse the real power behind the easy-to-use drag-and-drop construction method: you can drag Krusty with the mouse, advance or rewind frame by frame – in short, navigate to any point in your cartoon at any time to replay what you've done or to modify it. This is invaluable for adding sound effects, synchronising actions, and general fine-tuning. It transforms what

Be a big shot cartoon director, man! *Simpsons Cartoon Studio* makes it easy to concoct your own animated masterpieces.

You have frame-perfect control over every element in your cartoon and can lock it in place, or cut it, for all or part of the action.

Batman gone!

A year ago we reviewed *The Batman and Robin Cartoon Maker*. Next to the Simpsons, it now looks very crude and limited – it has basic drawing tools, but all it does is record what you do on screen as you do it – no editing, only one character moving at a time. It's just £20, but if you see it on sale, don't bother.



might have been a young kids' plaything (though admittedly an impressive one) into a versatile creative tool that adults too will find surprisingly absorbing.

Another example of the program's hidden power: as you add props and characters, they appear in the "Layer Manager" palette down the left of the screen. If you want a character to move "behind" a prop or be masked by an object, you can alter the "layering" order simply by dragging the appropriate icons up or down the palette – a remarkably sophisticated touch. The only drawback is that this alters the order for the whole cartoon, right from the start, so Bartman can't chase Lisa around the sofa.

There are, inevitably enough, other limitations. You can't actually "splice in" any new footage, only work in linear fashion from start to end – though you can always rewind and add more action clips onto an existing sequence (so you can add Marge's reaction as Homer is zapped by a UFO, say...). You can't invert or "flip" any object or character, making someone face the other way or walk in from right to left if there isn't already a right-to-left version provided – but this is forgivable, given the already impressive range of items to choose from ("over 10,000 cels of hand-drawn character animation," boasts the box). Nor can you scale items to make them larger or smaller – so no "giant Maggie" plots, I'm afraid. You can

As well as props and characters, you can add background music and sound effects – even authentic voice clips. Awesome!

"lock" characters or props in position for the whole cartoon or for the rest of it (for example, when they've finished an action and you want them to stay standing there while someone else does a bit of business), but they seem to be "locked" only for the current length of the cartoon and vanish when it is extended. True, you can scroll back frame by frame to the last frame where they appear and lock them in place again, but this gets fiddly with several characters on stage.

More seriously, there is no Undo, or even "revert to saved". You can delete any item completely (or from a given frame onwards, or from a given frame *backwards*), but not undelete it again if you change your mind. And if you accidentally click on the "lock permanently" rather than the "lock from here on" icon, your item is frozen in its current position right from the start of the cartoon and won't perform its action any more, but all you can do is discard what you've done and re-open the last version of your cartoon that you've saved.

But honestly, how much more can you ask from a program that costs just £30? *The Simpsons Cartoon Studio* isn't really meant to be a professional animation suite – but you might be forgiven for thinking it was, with its range of amazingly powerful functions, its versatility, and the sheer quality of the drawing and animation. It is straightforward enough for kids to enjoy, but impressive features like its "onion-skinning", flexible layering and frame-accurate control make it... well, simply radical, man. Like 3D landscape creator *Bryce* and image-distortion program *Kai's Power Goo*, *The Simpsons Cartoon Studio* might not do anything you strictly *need* to do, but like those two programs it enables you to discover just how much *fun* creativity can become.

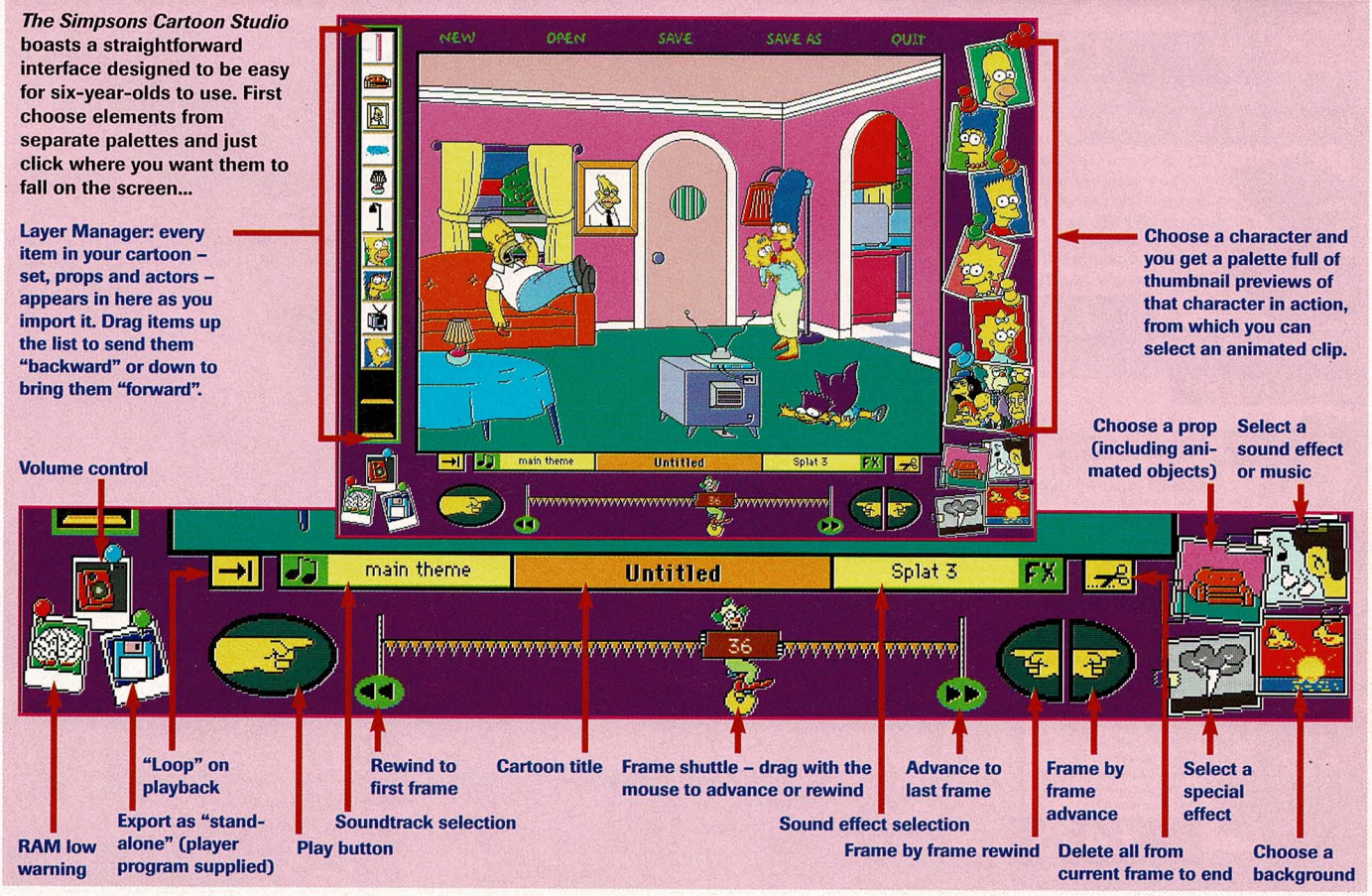
The Simpsons Cartoon Studio

A brilliantly accessible animation system with remarkably powerful features. Fun, absorbing, superb value for money.

MF rating 85%

Take charge of the Simpsons

The Simpsons Cartoon Studio **boasts a straightforward interface designed to be easy for six-year-olds to use. First choose elements from separate palettes and just click where you want them to fall on the screen...**


NEW
OPEN
SAVE
SAVE AS
QUIT
main theme
Untitled
Splat 3
FX
36
Layer Manager: every item in your cartoon – set, props and actors – appears in here as you import it. Drag items up the list to send them "backward" or down to bring them "forward".
Choose a character and you get a palette full of thumbnail previews of that character in action, from which you can select an animated clip.
Volume control
Choose a prop (including animated objects)
Select a sound effect or music
"Loop" on playback
Export as "stand-alone" (player program supplied)
Rewind to first frame
Soundtrack selection
Play button
Cartoon title
Frame shuttle – drag with the mouse to advance or rewind
Sound effect selection
Advance to last frame
Frame by frame rewind
Frame by frame advance
Delete all from current frame to end
Select a special effect
Choose a background
RAM low warning

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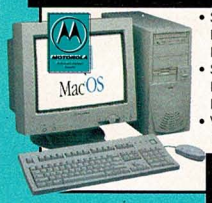

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NEW MACHINES FROM APPLE

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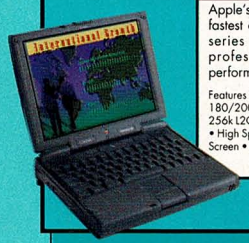

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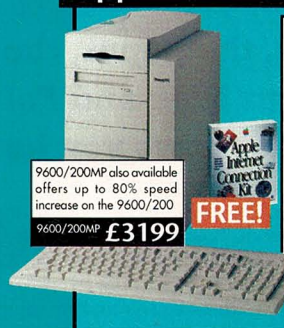
Apple PowerMac 9600



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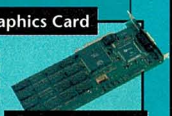

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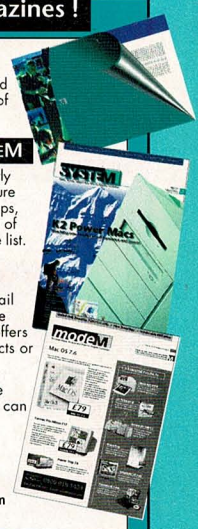

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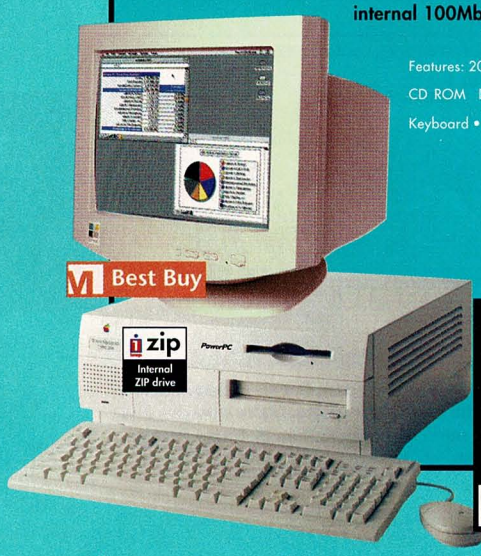

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Create a cartoon

Throw away the felt pens, the paper, the lightbox and the camera. Sit back with your Mac and *Painter*, and start animating. Alistair Dabbs shows you how...

ON THE CD

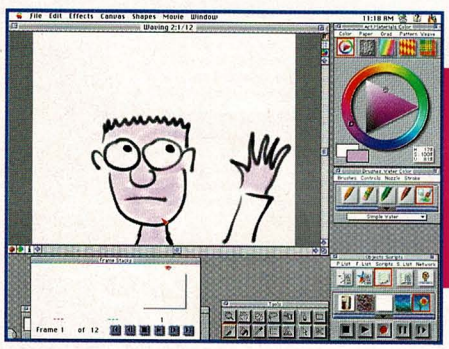
Save-disabled *Painter 4* demo in the **Animation** folder

Fractal Design's *Painter 4.0* is a multi-talented piece of software. Most of the time it is advertised as a natural media bitmap paint package, but it's so much more than this. One of *Painter's* finest features is its built-in support for frame animation – you can record your paint strokes and play them back; *Painter* can even import QuickTime movies for editing by hand, frame-by-frame.

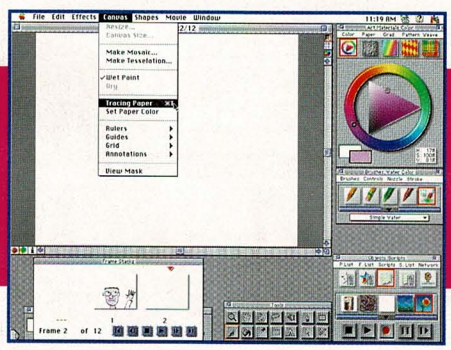
Here, we're going to have a go at cartoon animation. All you need for this is a copy of *Painter 4.0* and a free afternoon. Best of all, *Painter* makes the whole process straightforward and intuitive. As with all freehand art projects, you will find it much easier to complete using a graphics tablet for input – but if you're careful with your mouse, you can have just as much fun.

The average five-minute cartoon animation can take many weeks to produce, so let's start off with a mini-sequence that lasts just a couple of seconds. Since you can preview your animation as you work, you can get an early impression of how well (or not) you are managing. The final QuickTime movie will only take a minute or two to process, even on a 68K (non-PowerMac) Mac.

We reviewed *Painter 4* in MACFORMAT 35, and it scored a MACFORMAT Classic rating of 91%. There's a save-disabled demo on this issue's Cover CD; the full program costs £492. For details, contact Principal Distribution on 01756 704000. If you missed our review, turn to page 142 for details of our back issues service.

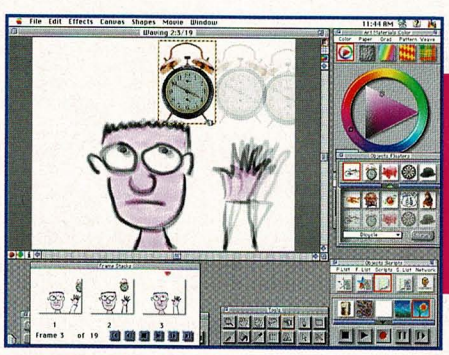


4 ***Painter*** **now takes a few moments preparing the 12 empty frames you asked for, putting them in a "stack". You can navigate the frame sequence using the Frame Stacks palette that has now appeared. In your first frame, draw a cartoon character. The little man above will be waving while looking at an object passing overhead (which we'll add later).**

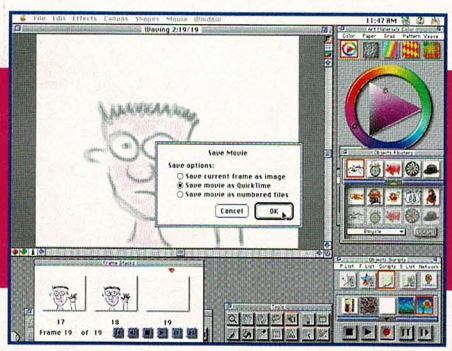


5 When you have completed the first frame, click on the Next Frame button in the Frame Stacks palette. In a second or so, the palette will show a thumbnail of the frame you drew and clear the main window for the next frame. Now we want to use the first frame as a template for the second one, as if working over a lightbox. To get this effect (also known as "Onion Skin"), select Tracing Paper from the Canvas menu.

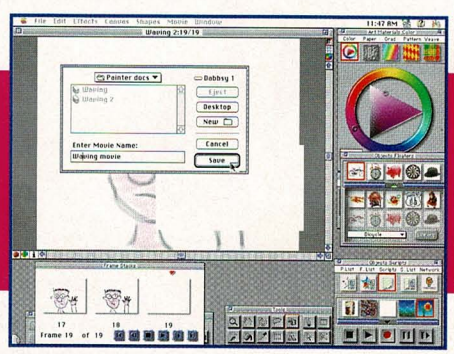
6 You can now draw the second frame of your cartoon over the top of the first. Don't worry too much about accuracy at this point; a bit of wobbling adds life to an animation. Click on the Next Frame button in the Frame Stacks palette and move onto the third frame. The number of transparent frames you can see at any one time depends upon the number of Onion Skins you selected at the outset.



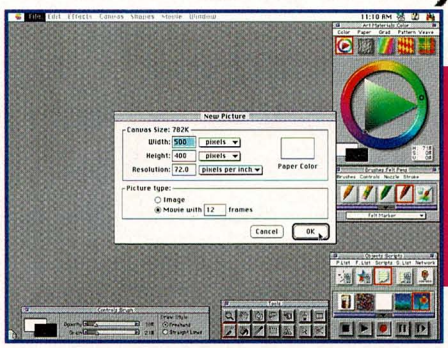
10 Each time you move to the next frame in the cartoon sequence, nudge the floating clock along a little. As shown above, we were trying to keep it in line with the direction of the cartoon character's eyes. To lock the floater in position, just move on to the next frame. Because it remains a floater, you can always go back and re-adjust it. Only when you deselect the final occurrence of the floater in your animation do all the rest merge into the frames permanently.



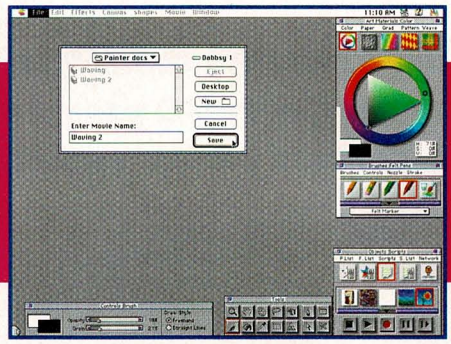
11 Once you are happy with your animated floaters and cartoon people (remember you can preview the show at any time using the controls in the Frame Stacks palette), choose Save As... from the File menu. In the Save Movie dialogue box that appears, you should select Save Movie as QuickTime. Then click OK.



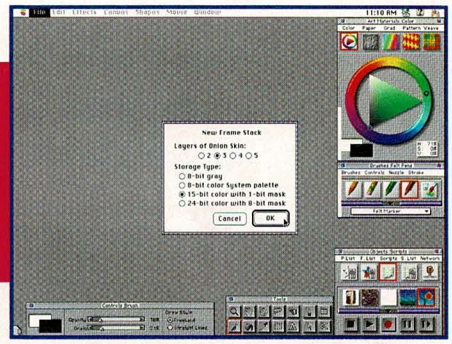
12 You are now prompted for a filename for the QuickTime movie. Make sure you don't use the same name as your multi-frame *Painter* document. Click OK.



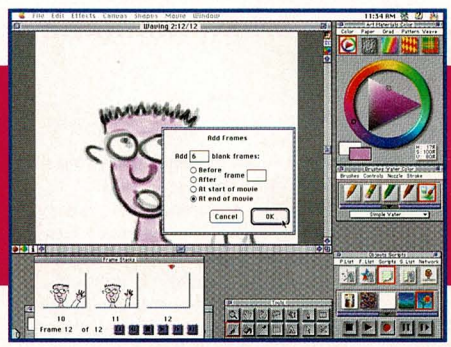
1 Run *Painter*, then select **New** in the **File** menu (or press **[command] N**). In the **New Picture** dialogue box that appears, select a realistic canvas size for your animation – keep it to 500 x 400 pixels or smaller. At the bottom of the box, select **Movie** as your picture type and enter **12** for the number of frames. You can add and remove frames later whenever you want. Click **OK**.



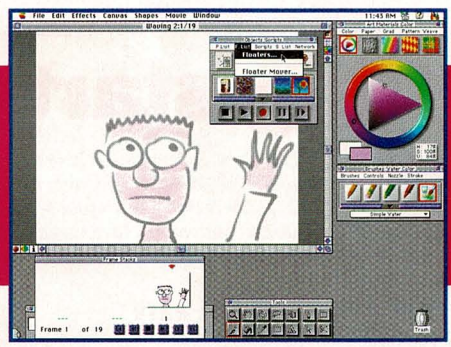
2 You are now prompted to enter a filename. Remember that this will be used as the name of your multi-frame *Painter* document, not the QuickTime movie, which is compiled later. Keep saving your work as you go. Click **OK**.



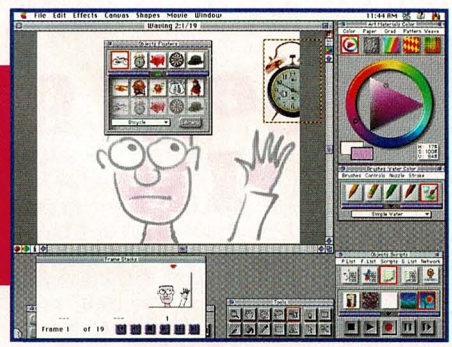
3 The **New Frame Stack** dialogue box appears. The "Onion Skin" feature enables you to view multiple sequential frames simultaneously. You can select up to five Onion Skins, but if you're a beginner, three is less confusing. Under **Storage Type**, select **15-bit colour with 1-bit mask.** You could opt for the 8-bit colour System palette as we aren't using masks here, but colour and anti-aliasing would suffer if you do. Click **OK**.



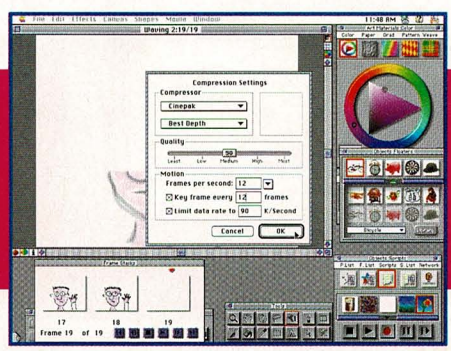
7 If, like us, you find you didn't create enough frames when you started, you can at any time select **Add Frames** from the **Movie** menu and enter, in the relevant dialogue box, the number of additional frames you want and where you want them placed. If you choose too many, you can select **Delete Frames** from the **Movie** menu. If you want to wipe some frames blank, choose **Erase Frames.**



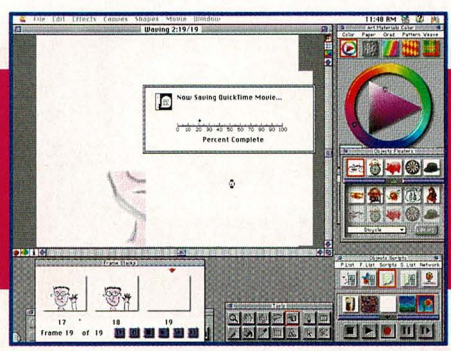
8 Our jerky cartoon of a mere 18 frames is just about finished. Clicking on the **Play** button in the **Frame Stacks** palette enables you to preview the animation. Now we're going to add some flying photographic images from *Painter's* library of floaters. Open the **Objects** palette from the **Windows** menu, then select **Floaters** from the palette's **F. List** menu.



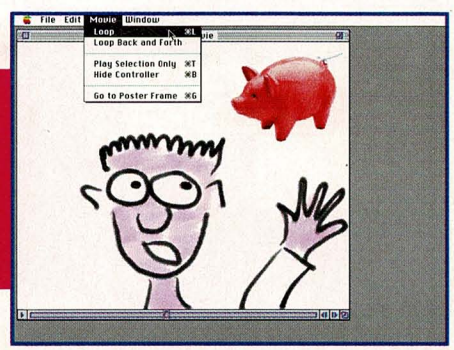
9 The **Objects: Floaters** palette will now appear. Return your animation to frame one. Click on the thumbnail of the alarm clock and drag it directly onto the frame as shown. As long as the chevron selection marquee can be seen, the clock will remain floating and appear in each frame as you move on.



13 You can now choose a number of animation and compression preferences. You can leave all these at their default values, but if you fancy e-mailing your animation to some friends, choose a compression type such as Cinepak (commonly used on multimedia CD-ROMs). Leave the quality at **Best Depth** and 50%, and leave the other options as as they are too, unless you particularly want to alter something. Click **OK**.



14 *Painter* will now compile your frames into a single QuickTime movie. This will take a minute or two, depending upon the power of your Mac. And, when that's done, that's it! Congratulations! You've just created your first successful cartoon animation!



15 To play your movie back, simply double-click on the file icon. Here, we've opened the movie up in a simple playback utility – *MoviePlayer* will do fine. Set your QuickTime player to loop the movie, because at only 18 frames, one blink and you'll have missed it. Terrible artwork, but strangely effective when you see it moving. Now try again...

Get animated now!

Don't own *Painter*? Then try creating a short QuickTime animation using our Cover CD programs! Phil Elliott, animator of our Cover CD cartoon serial, explains how easy it can be...

ON THE CD

Jonni Starr, our exclusive animated sci-fi adventure series, continues with episode 6 on the Cover CD.

In the 1970s, a children's TV programme called *Vision On* used to hold annual animation competitions. I dearly wanted to submit a film but didn't possess a cine camera. Years later, I did eventually buy a cheap cine camera and attempted some animation involving moving chess pieces around a board. It was a laborious task – my camera wasn't capable of filming single frames, the makeshift camera stand (a pile of books) kept moving, and I couldn't get the chess pieces in focus. I then had to wait two weeks for the film to be processed before I could play the fuzzy black-and-white footage onto a wall through a projector borrowed from a friend. I watched it a couple of times before the film got stuck in the projector and melted in front of my eyes...!

It wasn't until I bought a Performa 475 that I decided to dabble in animation again. I knew about computer animation, of course – I'd seen *Tron* and was aware that Disney was using computers on films like *Aladdin*. I'd also seen *Toy Story*, but knew I wasn't going to be able to do anything like that, not least because my Mac didn't possess an FPU, ruling out any 3D work. On top of that, I also couldn't justify spending much on an animation package. Oh, and I didn't have a couple of years to spare...

This time, though, help was at hand, when I discovered a shareware application called *Moover*, which can combine PICT files into a QuickTime movie. Over time, I came across more applications that eventually helped me to create *Jonni Starr*, the exciting SF adventure serial which appears exclusively on the MacFormat Cover CD. And they can help you create your own animations on most Macs, for minimal cost and even with limited memory – *Jonni* is produced on a Performa 475 with just 8Mb of RAM and a 160Mb hard disk. Here's how!

Stage 1: getting started

ON THE CD

You'll find all the shareware programs mentioned here in the **Animation** folder on the CD.

If you've ever used a painting package, then you may be surprised to learn that there are only a few simple stages to animating your pictures. Creating animations is renowned for being time-consuming, but using a computer can help speed things up. It is easy to apply and manipulate colours, textures and backgrounds, which traditionally would have been hand-painted onto plastic cels. It's possible to view your finished animation within minutes and edit with the same ease as editing text in a word processor.

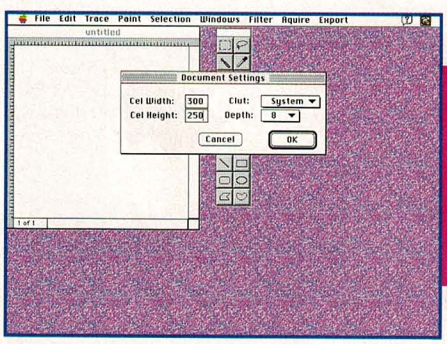
That said, it's just as easy to spend hours working on tiny sequences, as I often do with *Jonni Starr!* It really all depends on how far you wish to take things. Here, we'll introduce you to the basics of animation, so you can go off and experiment more on your own.

Nice and easy

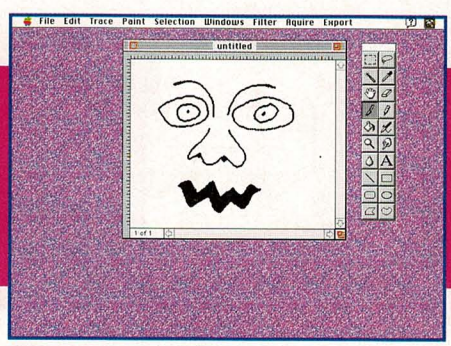
To begin with, it's best to keep things simple and cheap, and you can't get much cheaper than *CelPaint* – it's free, and you'll find it on the Cover CD, in the **Animation** folder. Using this program, you can take some time to experiment, without first having to pay out any cash. *CelPaint* is a prototype animation application, but it has features that you'd find on many commercial programs.

However, as it is a prototype, it may contain a few bugs (but what software doesn't?). I've used *CelPaint* on all the *Jonni Starr* episodes without any real problems, except one: using the pencil tool always causes *CelPaint* to quit. So, a good tip to follow at all times is don't use the pencil tool!

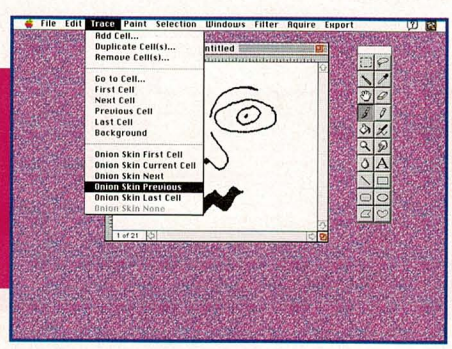
Two essential items you need before you start this stage of your creation are the QuickTime Extension and *MoviePlayer*. But don't panic! You'll find the latest versions of both of these in the Resources folder on the Cover CD.



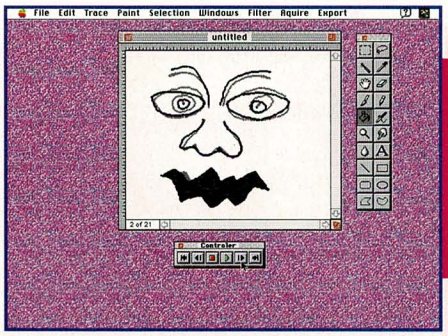
1 After launching *CelPaint* choose **New** from the **File** menu. The default window is probably too large, so reduce it by selecting **Document** from the **Paint** menu and changing its size to 300 x 250 pixels (you will need to reset the document size every time you open a *CelPaint* file). Resize the window by clicking on the square icon in the top right-hand corner. Next, you'll need to resize the paintbrush – double-click on the paintbrush icon in the toolbox. Remember, don't touch the pencil icon! You can now select a new brush size.



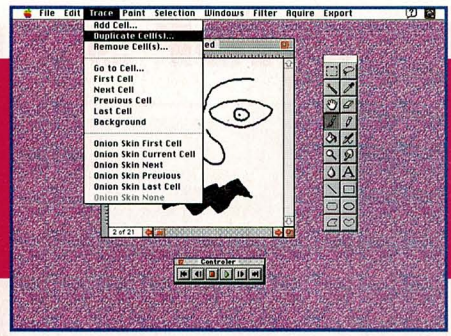
2 Now you can start drawing. How detailed you make your drawing is up to you, but try to keep it simple for now. Try doodling something – a squiggly shape, a face, a tree, anything. Don't spend too long on this because you want to get to the animating stage as soon as possible, and don't bother about using colour yet.



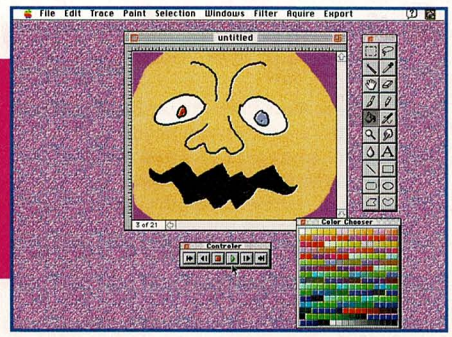
3 Once you've got a picture, choose **Add Cel** from the **Trace** menu and type in **20** (the maximum allowed). You'll now be presented with a blank window (this is frame 2). Next, choose **Onion Skin Previous**, again from the **Trace** menu, and you'll now see your original drawing "onion-skinned" (or ghosted out) beneath frame two. Save your work and keep doing so regularly.



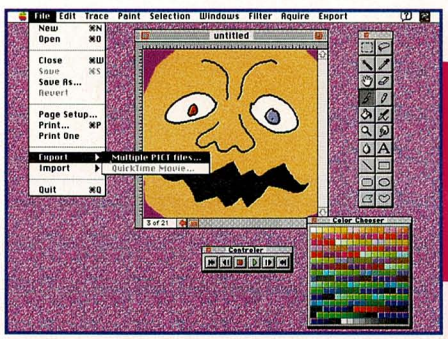
4 Select **Show Controller** from the **Windows** menu and then trace over the image from frame one, making slight changes to the drawing – a larger nose, another squiggly pattern, a taller tree. Then click on the second arrow from the right on the **Controller Panel** to move onto the next frame, which should now show frame two onion-skinned, and again trace and make changes. Keep doing this until you've drawn on all the cels.



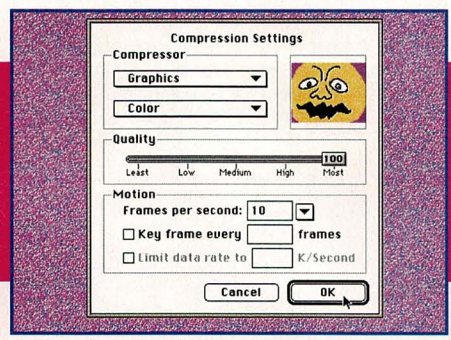
5 As an alternative to tracing every frame, you can use the **Duplicate Cel** command (under **Trace**) instead of **Add Cel** at step three. This copies your original drawing, so all you have to do is erase and redraw the parts you want to move.



6 Finally, select **Onion Skin None** from the **Trace** menu and play back the finished animation by clicking the green arrow on the **Controller Panel.** Stop the animation by clicking the red square. If you wish, you can now apply colour to each frame by calling up the **Colour Selector** from the **Windows** menu. You can also add and animate new elements to all or some of the frames (you'll need to select **Trace** from the **Onion Skin Previous** menu again).



7 *CelPaint* doesn't have the facility for saving your animation as a QuickTime movie, so you'll need the help of another application such as *Moover,* which is also on the Cover CD. First, export your frames by selecting the **File** menu, then **Export,** and then **Multiple PICTs,** which saves all the frames in one folder. Quit *CelPaint.*



8 Making sure that the *Moover* application icon is visible on your Desktop, open the newly-saved folder, select all the PICTs and drag them onto the *Moover* icon until its name is highlighted. *Moover* will launch and prompt you for its settings – 256 colours, a compression setting of **Graphics/Colour,** at a rate of 10 frames a second gives decent playback and uses up minimal disk space.

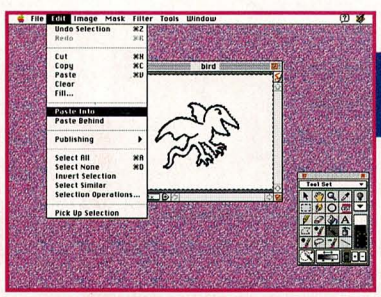
9 *Moover* will combine all the PICTs into one QuickTime movie. If you've got *MoviePlayer* installed, simply double-click on the new file to view your animation, all two seconds of it!

Stage 2: adding depth

CelPaint is fine for producing black-line and flat colour artwork but it's limited in other respects. To enhance my animations I use *Color It!,* which was on last issue's Cover CD. It uses little disk space and runs quite happily in just 3Mb of RAM.

In the **Animation** folder on the CD you'll find a folder of PICTs I created in *CelPaint.* Follow these steps to learn how to use *Color It!'s* Magic Wand tool and its Copy and Paste commands to add depth to one of these PICTs.

Normally, you'd need to do this to all the other PICTs before using *Moover* to create a QuickTime movie, but to save time I've already done this for you so you can move straight on to the next production stage, that of adding sound to the animation. Just follow the four simple pointers before going to stage three overleaf.



1 Launch *Color It!,* and then open the background image "Desert" from the **Samples** folder. Go to **Select All** in the **File** menu, then **Copy** from the **Edit** menu, and finally **File** to **Close** "Desert". Next, open "Bird" and, using the Magic Wand tool, click on the white area surrounding the bird. This will now be highlighted with dots that look like little marching ants. Use the **Paste into** (not **Paste**) command from the **File** menu and the desert image will appear behind the bird.

2 Now you can apply a texture to the bird itself. Open the "Texture" file, then **Select All** and **Copy.** Close "Texture". Now use the Magic Wand to select the white area inside the Bird and **Paste Into** to apply the texture.

3 To add depth to the frame, you now want to add a foreground. Open "Foreground" and select the white area with the Magic Wand. Now click on the brush icon in the top right corner of the window and highlight "selection". The little ants will now turn into baby marching ants! Keep "Foreground" open.

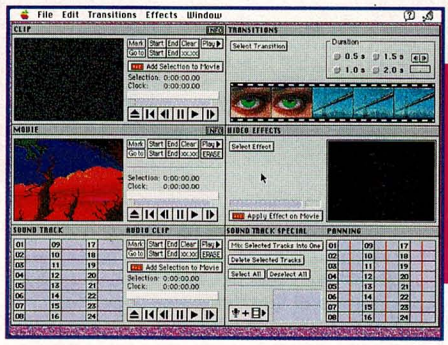
4 Bring "Bird" to the front, **Select All** and **Copy.** Close "Bird". Now you can use the usual **Paste** command to insert the bird and its background behind the foreground. Keeping up so far?

Stage 3: wired for sound

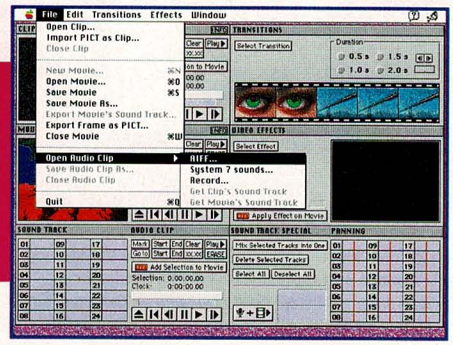
Most Macs have the facility for recording sound – some have built-in microphones, and you can plug a Plain Talk mike into those that don't. There are also dozens of shareware applications that are capable of manipulating your sounds in amazing ways, from adding echo or reverb to reversing a sound or changing its pitch. Two such programs are included on the Cover CD. The cheapest and simplest to use is *Soundhandle*, which is freeware, while *Sound Effects*, a shareware program, offers more features.

Unfortunately, there seems to be little shareware that enables you to record music on your Mac without the addition of a MIDI keyboard. (As I don't possess a MIDI keyboard, I've had to record all the music in *Jonni Starr* by sellotaping a mic into headphones attached to my daughter's electronic keyboard!) However, *MacModPro*, another shareware application, enables you to record short samples in MOD format, and this is what I used to record the music on the CD.

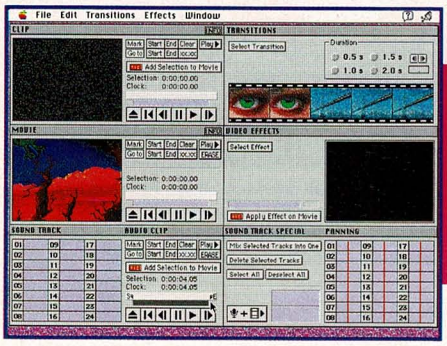
To add the music to your animation you need a program such as *QuickEditor*, which is also shareware and also on the Cover CD.



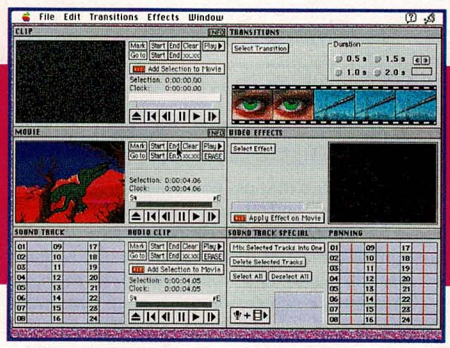
1 Launch *QuickEditor* and open "Silent Movie". The first frame will appear in the **Movie** preview window. You can play the movie by clicking on the **Play** arrow on the **Control Panel.** As the movie plays, you'll see the clock time change and the **Selection** window shade in. This selection window is an important part of *QuickEditor* – hitting the **Start** button will select the start of any portion of movie or sound you wish to edit and, after dragging the **Selection** window, hitting the **End** button will select the end of the portion. Little "S" and "E" markers will be left in the **Selection** window.



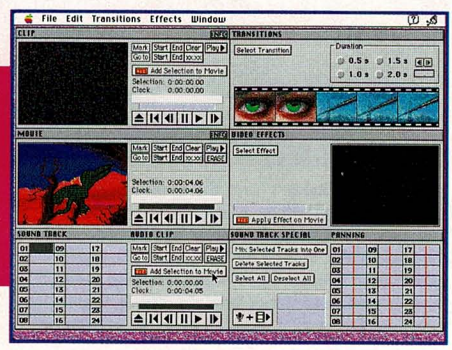
2 Next, import an audio clip via the **File** menu. The sounds used are in AIFF format, so you'll need to select AIFF when asked. The first sound is "Music", which is in the **Samples** folder.



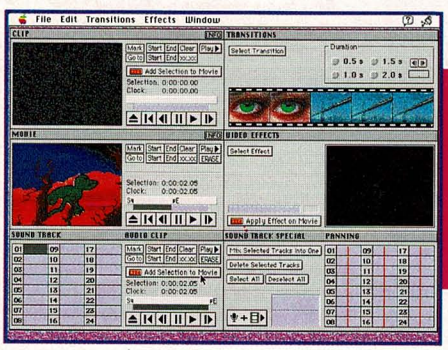
3 Hit **Start** at the beginning of the audio clip to leave an "S" marker, drag the selection all the way to the right, and then finally hit **End** to leave an "E" marker.



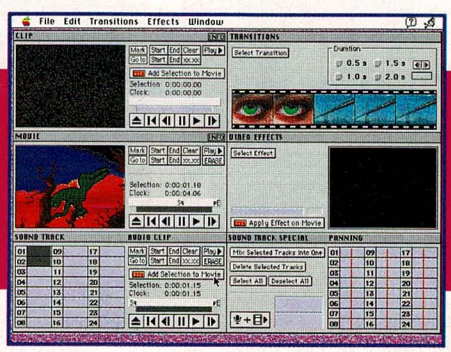
4 To add the sound to your movie, you first need to select the portion of the movie where you want the sound to go. Clear any **Start** and **End** markers in the movie by hitting the **Clear** button and then drag the selection all the way to the left to make sure the movie is at frame one (the clock should read zero). Hit **Start**, drag the selection right to the end and then click **End.**



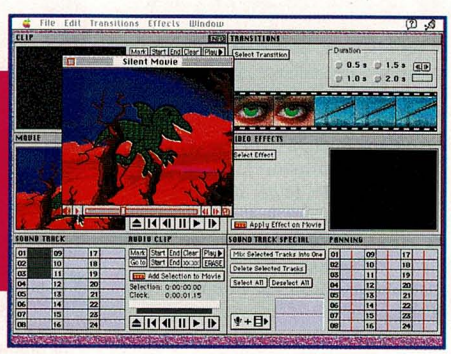
5 Hit the **Add Selection to Movie** button in the **Soundtrack** window. The sound will instantly be added to your movie and you'll see it highlighted as "Track 1" in the Soundtrack list. Play the movie to hear the result.



6 Now import "Sound 1" as in step two, which will automatically replace the previous sound. Select all of the audio clip as in step three. Drag the movie selection all the way to the left to make sure the movie is at frame one again. Hit **Start**, then drag the selection to the right until the clock reads 2:05 and hit **End**. Hit the **Add Selection to Movie** button.



7 Finally, import "Sound 2" and select all of the audio clip using the **Start** and **End** buttons again. You want this sound to start just after the previous one ends, so drag the movie selection until the clock reads 2:18. Hit the **Start** button, drag the selection right to the end of the movie, and hit **End**. Now add the audio selection to the movie as before.



8 To get a better view of the finished movie, click once on the **Movie Preview** window to bring up the full-size version. You can't save this or any movie you make with *QuickEditor* until you pay the shareware fee, but at just $25 it does offer excellent value for money. *Jonni Starr* is made up of many short clips created as described here. Have a go and send us *your* movies for the CD! **MF**

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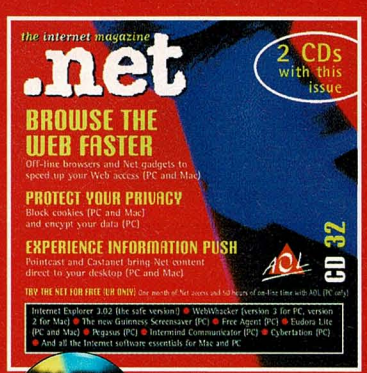
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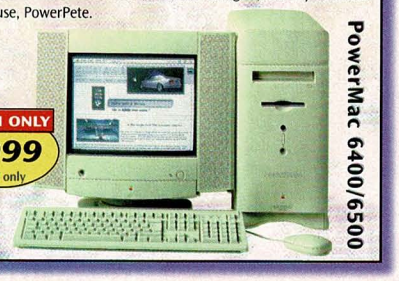

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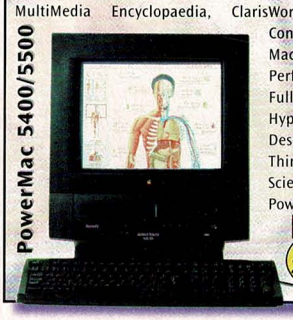

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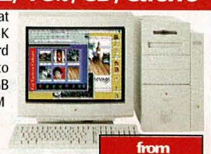

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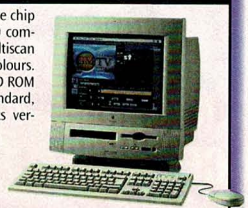

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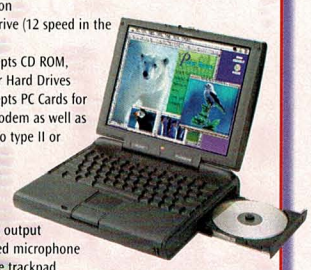

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6320 12/1.2Gb/CD

Based around a Power PC 603e chip running at 120MHz, the 6320 supports a 14" or 15" multiscan monitor and has a built-in quad speed CD ROM drive. It has 12Mb of RAM as standard, 256k Cache, and includes completely free ClarisWorks version 3.0 and massive software bundle.

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The Apple LaserWriter 4/600PS is ideal for the individual home, education and small business users, and it's capable of integrating into offices that have Ethernet. Being Energy Star compliant, the printer works without an on/off switch and instead 'wakes up' when required, consuming less than 10 watts of power when asleep.

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The new Apple Macintosh 7300 series combines affordability, high performance and upgradeability to provide an ideal system for small and medium sized businesses, for home offices and for running productivity or multimedia applications in organisations of any size.

- PowerPC 604e at 180 or 200 MHz
- Integrated FPU and 64K cache
- 16MB RAM, expandable to 512MB
- 256K level 2 cache
- 1.2GB SCSI hard disk
- 12 speed CD-ROM
- Three PCI expansion slots
- Internal 3.5-inch internal expansion bay
- S-video input connector
- Real-time video playthrough of up to 768 by 576 pixels
- 2MB of VRAM, expandable to 4MB
- Fast 64-bit data path to VRAM
- Support for display resolutions of up to 1,280 by 1,024 pixels
- 24-bit color up to 1,152- by 870-pixel
- Refresh rate of up to 75 Hz
- 16bit stereo audio input and output
- 64bit VRAM subsystem
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- Supports Open Transport Networking software (TCP/IP and AppleTalk)

includes free Now Utilities

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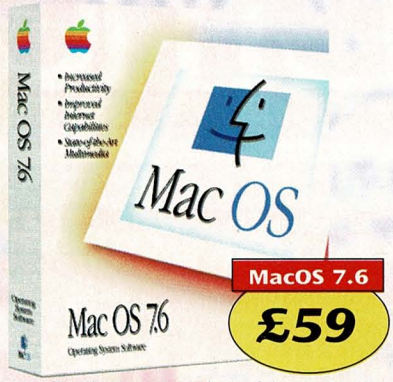
166MHz **£2199** or £21 pw (with Sony 17" monitor)

UPGRADE NOW! Mac OS 7.6



Mac OS 7.6 is the first release in Apple's new strategy of delivering state-of-the-art operating system functionality on a regular basis. This release unites many new Apple technologies with additional features and functionality, to offer pervasive Internet access, improved productivity, state-of-the-art multimedia and enhanced PC compatibility. Specifically, Mac OS 7.6 integrates the Internet more fully into your desktop and documents, provides new ways to work better and faster, enables the creation of more compelling multimedia documents and improves performance and ease of use in key areas such as installation, printing, networking and extensions management. Best of all, Mac OS 7.6 is designed to install easily and works with all System 7 based applications and files. It incorporates new features designed to improve the way you work including : Live Objects component software; enhanced support for PC files and media (including Windows 95); and advanced networking and printing functionality.

KEY BENEFITS:

INTEGRATED INTERNET
Latest versions of OpenDoc, Cyberdog, and Open Transport software including the Apple Internet Connection Kit.

IMPROVED PC COMPATIBILITY
Includes PC Exchange, Mac OS Easy Open, and DataViz MacLinkPlus translators.

FASTER, SIMPLER NETWORKING
Open Transport (OT) speeds and simplifies networking.

STATE-OF-THE-ART MULTIMEDIA
QuickTime Media Layer (QTML) makes it easier than ever to produce and play back high-impact multimedia such as video, sound, and 3D graphics.

SPEEDIER PRINTING
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NEW EXTENSIONS MANAGER
Simplifies configuration and troubleshooting.

9600/200 32/4Gb/CD/Cache

The Power Mac 9600/233 is top of the line in speed, performance, expandability and upgradeability, which is tremendous news for publishers - particularly those working with advanced colour - as well as multimedia professionals and engineers.

- Power PC 604e at 200 or 233 MHZ
- Integrated FPU, 64K cache
- 4MB IMS accelerated Video Card
- 32MB of RAM, expandable to 768MB
- 512K level 2 cache
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- 24 bit colour up to 1152 by 870 pixel reolution
- Refresh rate of up to 75Hz

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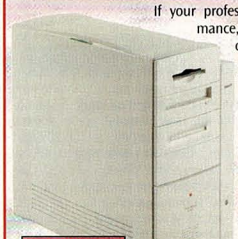
8600/200 32/2Gb/CD/Zip



If your profession demands a high-performance, expandable computer that's optimised to make work easy, choose the Power Macintosh 8600/200 system. This high-performance computerincludes built-in video-in and video-out capabilities in an innovative new design. It includes features that make it an ideal choice for in-house publishing, media authoring, and technical applications

- PowerPC 604e at 200MHz
- 256K cache
- Integrated FPU and 64K cache
- 32MB of RAM, expandable to 512MB via 4 DIMM sockets
- 2GB SCSI hard disk
- 12-speed CD-ROM
- Internal Zip drive
- Three PCI expansion slots
- Ethernet
- Stereo audio input and output support 16-bit audio and up to 44.1-kHz sampling rate
- 1MB of VRAM, expandable to 4MB
- Support for display resolutions of up to 1,280 by 1,024 pixels
- 24-bit color up to 1024x768 resolution

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Nomai 540Mb MCD £229
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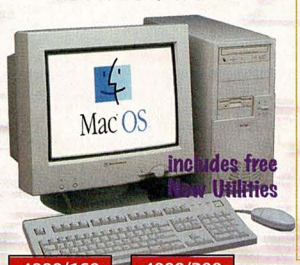
MINITOWER



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- 2.5Gb SCSI Drive
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- Mouse and keyboard
- Optional Ethernet
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- 16 bit stereo
- Five year limited warranty

100% Mac OS compatible!

All prices exclude the monitor but include a keyboard

3000/180 **£799**

StarMax 3000/180
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- 256K Level 2 cache
- 1Mb VRAM
- SVGA monitor port
- 1.2Gb SCSI Drive
- 8 x CD ROM drive
- Mouse and keyboard

StarMax 4000/160 or 200
- Power PC 604e at 160 or 200Mhz
- 16Mb expandable to 160Mb
- 256K Level 2 cache
- 2Mb EDO DRAM up to 4Mb
- SVGA monitor port
- 1.2Gb SCSI Drive
- 8 x CD ROM drive
- Mouse and keyboard
- Optional Ethernet
- 3 PCI slots
- 16 bit stereo
- Five year limited warranty

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- Scanning resolution - optical 600x1200 dpi int. 3600x3600 dpi

SAPHIR A4 **£1895**

SAPHIR U

SAPHIR U **£2995**

The SAPHIR Ultra adds that extra touch of class to DTP scans, boosting resolution to an impressive 1000x2000dpi

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- Scanning resolution - optical 1000x2000 dpi, interpolated 6000x6000 dpi

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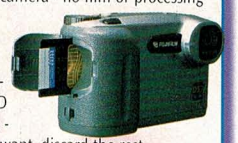

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THDR	SpellCatcher (spellchecker, works in all applications)	£45.00
WDP3	WordPerfect v3.51 (trade-in from any other word processor)	£55.00

DATABASES

4DFR	4D First (powerful and fully relational starter database)	£95.00
ACTA	ACT! v2.5 (excellent contact management)	£149.00
CORG	Claris Organiser v2 (full featured new database)	£65.00
FLMR	FileMaker Pro v3.0 (now with relational features)	£155.00
INFG	InfoGenie (info organiser, supercedes QuickDex)	£45.00
NOWB	Now Up-To-Date v3.6 & Now Contact v3.6 Bundle	£79.00

BUSINESS

ASTD	Astound v2.0 (powerful presentation package)	£159.00
CLWR	ClarisWorks Internet Edition (leading integrated package)	£89.00
DLTG	Deltagraph Pro v4.0 (best graph and chart program)	£99.00
EXCL	Microsoft Excel v5.0 (market leader, great features)	£249.00
UGMSF	Microsoft Office v4.2 (Word, Excel, PowerPoint) cross trade	£185.00
WRKS	Microsoft Works v4.0 (WP, DB, Comms, Draw, SSheet)	£85.00
MCMY	MacMoney v4.0 UK (home accounts/budgeting package)	£65.00
MYOB	MYOB v6.0 (integrated single user business accounts)	£139.00
PERS	Persuasion v4.0 (high end presentations with outliner)	£195.00
PWPT	PowerPoint v4.0 (powerful, intuitive, easy inteface)	£265.00
SINQ	Route 66 CD ROM (road routefinder, includes UK map)	£45.00

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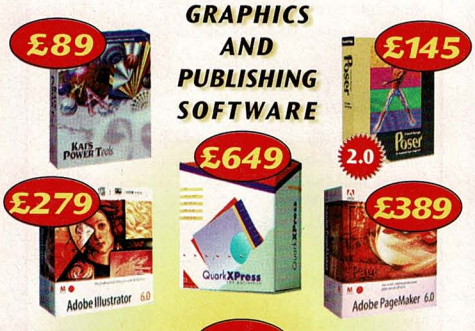

GRAPHICS

PHSPB	Adobe Collection v2 (Pshop 4, Illust. 6, Dimen. 2, ScmReady)	£525.00
CNVS	Canvas v5.0 (long awaited new version)	£345.00
CLDW	ClarisDraw (powerful, easy to use draw package)	£109.00
UGCRM	CorelDraw v6.0 (trade in from any graphics package)	£99.00
ADIM	Dimensions (Adobe's 3D extension for Illustrator)	£99.00
DBLR	Dabbler v2.0 (great beginners paint program)	£49.00
PSERM	Fractal Design Poser v2.0 (create human figures)	£145.00
FRND	Freehand v7.0 (professional PostScript drawing & text)	£295.00
MMSF	Freehand Graphics Studio v7.0 (Fhand 7, X3D, Fonto, X-Res)	£425.00
UGFNGB	Freehand Graphics Studio v7.0 (upgrade from Freehand 5.5)	£159.00
INFD	Infini-D v4.0 (leading 3D modelling & rendering tool)	£595.00
ILST	Illustrator v7.0 (pro PostScript drawing, text & layout)	£275.00
KPTG	KPT Power Goo (fun photo retouching program)	£39.00
KPTK	Kai's Power Tools v3.0 (amazing filters for Photoshop)	£89.00
KPTV	KPT Vector Effects (Illustrator/FreeHand FX Plug-Ins)	£89.00
KPTC	KPT Convolver (adds power and ease to Photoshop)	£89.00
KPTD	KPT Bryce v2.0 (3D Skies and landscapes)	£129.00
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MCAD	MiniCad v6.0 (native professional 3D design & analysis)	£495.00
RYDS	Ray Dream Studio (3D design, modelling, animation)	£299.00
PHOD	PhotoDeluxe (cut-down PhotoShop for non-professionals)	£79.00
PHSP	PhotoShop v4.0 (world's favourite retouching tool)	£389.00
PNTR	Painter v4.0 (the premiere painting program)	£245.00
TRBC	TurboCAD 2D/3D (budget but powerful CAD package)	£105.00

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ATMC	ATM Deluxe v4.0 (manages and smooths screen/printer fonts)	£49.00
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CBGB	Corel Gallery II (15000 clip art images)	£25.00
FLCH	FlightCheck (pre bureau check on Xpress/PgMkr docs)	£245.00
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HP66	HP DeskWriter 660c (colour and mono in one)	£185.00
HP87	HP DeskJet 870Cxi (Mac & PC)	£335.00
PWPR	PowerPrint (driver and cable for non-Apple printers)	£79.00
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S21X	Radius PrecisionView 21	£1045.00
SN15C	Sony 15" 100sx MultiScan Monitor CPD	£295.00
DP17T	Mitsubishi DiamondPro 17" 67TXV	£445.00
DP17	Mitsubishi DiamondPro 17" 87TXM	£489.00
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AFST	Agfa StudioStar (600 x1200dpi, 30 bit colou)	£599.00
AVCS	Avision 100CS (colour desktop scanner)	£199.00
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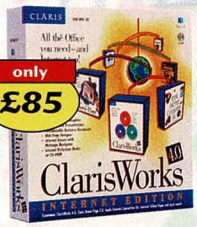
ONLY **£199** free software

CLARISWORKS INTERNET EDITION

CLARIS



ClarisWorks 4.0 - Internet Edition provides a full set of office productivity and Internet software to handle all your office needs and make it simple to surf the Internet and create your own web pages. It includes **ClarisWorks 4.0** with customized small business documents, the **Apple Internet Connection Kit, Claris Home Page**, plus the Internet Yellow Pages and The ABC's of the Internet books on CD-ROM.

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•Create Web Pages with Claris Home Page
Create and publish your own dynamic Web pages in just minutes - without having to learn HTML programming. The intuitive user interface, step-by-step instructions and clip art collection make it easy to create eye-catching Web pages.

•Easy Internet Access and Reference Books
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ASPA	**AsantePrint** (Ethernet to AppleTalk printer router)	£249.00

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CLIW	**Scitex ClickWorks** (multimedia made easier)	£545.00
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PRMR	**Premiere v4.2** (Adobe's brilliant QuickTime editor)	£399.00
QKIM	**Quark Immedia** (use Xpress to create multimedia files)	£695.00
VIDD	**Video Director v2.0** (edit your home videotapes)	£89.00

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DSMT	**DOS Mounter 95** (read/write PC floppies) limited offer	£55.00
MLPT	**MacLink Pro** (best Mac/PC link with100's translators)	£105.00
SFWD	**SoftWindows v3.0** (special offer - while stocks last)	£195.00
SFWE	**SoftWindows 95** (New v4.0)	£265.00

INTERNET

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AINK	**Apple Internet Connection Kit** (available on CD ROM only)	£49.00
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STML	**SiteMill v1** (eases maintenance of Web Sites)	£139.00
WBBY	**Web Buddy** (makes your surfing easier)	£39.00

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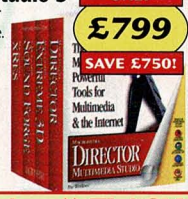

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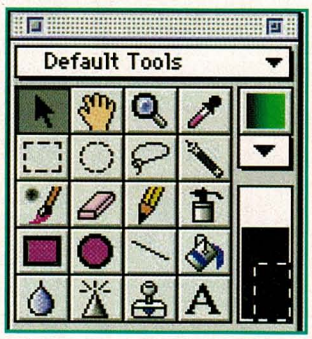
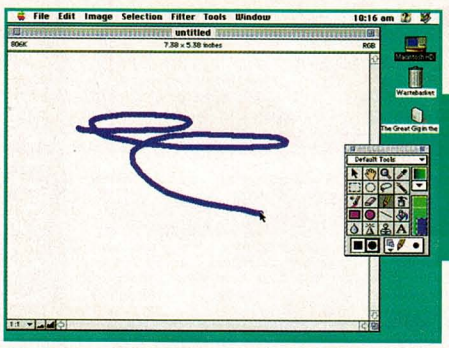
Art attack!

Last issue we brought you a fully-working version of *Color It!*, the brilliant paint and image-editing program. This issue, Jim Chandler shows you how it works and what you can achieve with it.

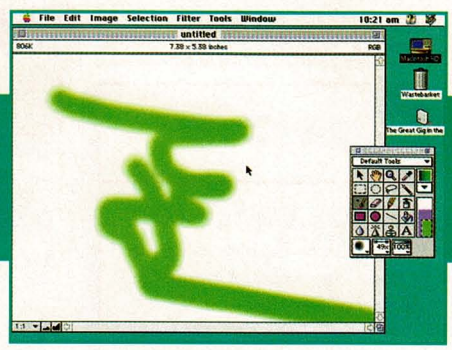
If all you want's a basic paint package, and *Photoshop's* a bit out of your price range, take a look at *Color It! 3.0.4LE*, included as a bonus Cover CD with MACFORMAT 50. This program is not only a fully-working version of MicroFrontier's brilliant full-colour paint and image-editing program, it's also that rarest of things, an easy-to-use application that also has some very powerful tools. Next issue, we'll be looking at *Color It!'s* more advanced tools for image editing and retouching, but this month's tutorial focuses on the basic (and fun!) paint tools. So put on your virtual apron and dive in...



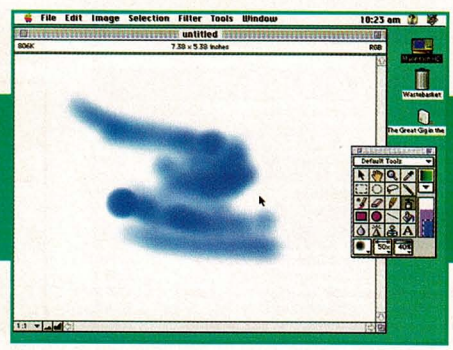
- Pointer tool
- Mover tool
- Magnifying Glass
- Eye dropper
- Rectangular selection tool
- Circular selection tool
- Lasso tool
- Magic wand
- Paint brush
- Eraser tool
- Pencil
- Airbrush
- Rectangular fill
- Circular fill
- Line tool
- Paint can
- Blur tool
- Sharpen tool
- Stamp tool
- Text tool
- Gradient tool
- Background and foreground colours



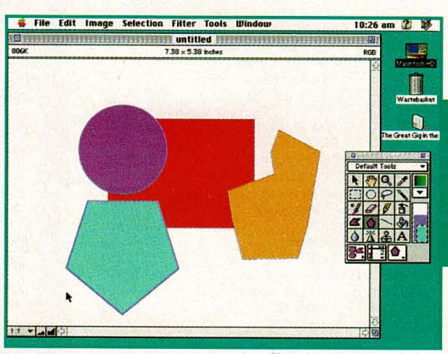
1 The pencil is the most basic painting tool in *Color It!* (just as it is in real life too). It draws lines of a fixed width and opacity, so you can be sure of consistency. If you want to change the pencil width, you can do this using the pop-up menu that appears at the bottom of the Toolbox when you select the Pencil tool.



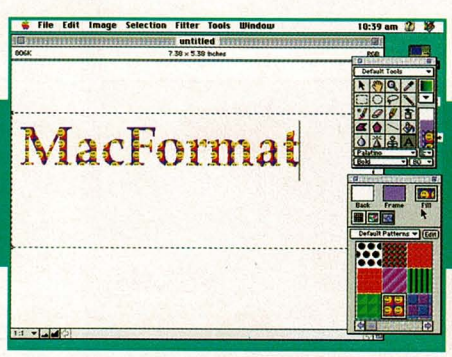
2 There can't be a more obvious painting tool than the paintbrush. *Color It!'s* Brush tool fades off nicely towards the edges, just like a real brushstroke. Just as with the Pencil tool, you can change the size of the brush from the pop-up menu on the bottom of the Toolbox.



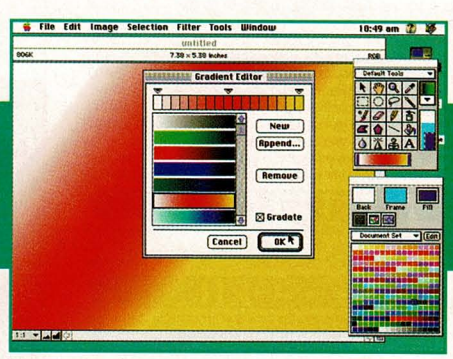
3 The Airbrush tool can give some very subtle effects. For a start, it's not completely opaque, so you can build up layers of colour. Moving the cursor more slowly will put down more paint. Stopping it for a few seconds will leave a dark splodge. Again, you can set up your airbrush from the bottom of the Toolbox.



7 *Color It!* has loads of tools for drawing shapes. You can choose from ovals, rectangles, regular polygons or freeform polygons, and you can set the frame widths, frame colours and fill colours separately. If you want your rectangle to be a perfect square, or your oval to be a perfect circle, hold down **[shift]** as you draw.



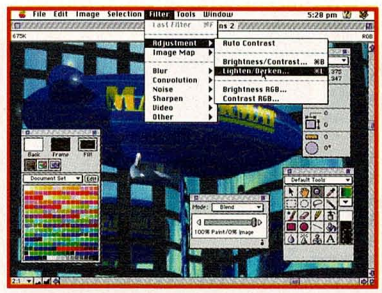
8 Text is easy to introduce into your document. Simply choose the Text tool from the Toolbox, select the font and size you want from the pop-up menus, and click where you want your text to start. Then, you just type in your text. Here, we've set up the fill to be this more cheerful pattern, rather than a flat colour.



9 Want to gain control over your gradients? Choose the Gradient tool, click on the little gradient on the bottom of the Toolbox, and decide which preset gradient you want. To edit them, click on one of the coloured boxes and choose a new colour from the Colour Picker. Then click and drag in your Image window to determine the start and end points and angle of your gradient.

COLOR-IT!

Discover what *Color It!* can do, and upgrade to *v3.2* at a bargain price!



You can produce some fantastic images using *Color It!*, and upgrading to version 3.2 gives you more creative powers.

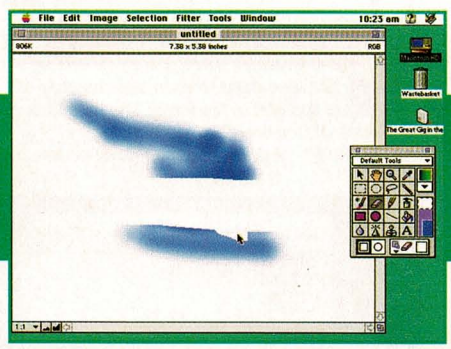
Color It! is a full-colour (32-bit) paint and graphics manipulation package that is capable of retouching images or creating artwork from scratch. It's fast, it's friendly, and it's plug-in compatible, which means you can use a whole range of *Photoshop* or *KPT* plug-ins to add new features and enhance its functions. What's more, it will run on any colour-capable Mac in just 2Mb of RAM and 2Mb of hard disk space. (If you have a PowerMac, a fully PowerMac-native version is installed automatically.)

The "LE" version on last issue's bonus Cover CD has a limited range of features, but if you want even more you can upgrade to the latest version, *Color It! 3.2*. It's the easy-to-use alternative to hard-to-learn RAM-guzzlers like *Photoshop*, and offers a full range of powerful tools and functions, including:

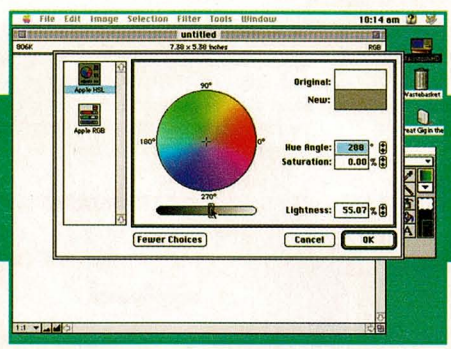
- CMYK four-colour separations
- Easy, one-step extrude and drop shadow filters – add 3D effects or realistic soft-edged shadows
- RGB Channel editing
- User-defined multiple Undo levels (up to 16)
- Levels and Curves filters
- Unsharp Masking filters
- Bezier brush and Crop tools
- Kernel Brush tool to apply convolution effects with any of 24 different brushes
- Live filter previews
- Open and Save in JPEG and GIF formats (including transparent and interlaced modes) formats – ideal for graphics for the Web!
- Advanced eight-bit masking, with separate Document Masks so your file size stays manageable

For a full listing of the features offered by *Color It! 3.2*, see the *Color It!* Product Info.pdf file in the *Color It!* folder on the CD. For details of how to upgrade to v3.2, see the "Upgrade!" box below.

Color It! 3.2 requires a colour Mac with 68020 processor or better, System 7.0 and 2Mb of RAM (3Mb on a PowerMac), so it's the perfect image manipulation application for more modest set-ups. And at our exclusive special upgrade price, you can't buy better!

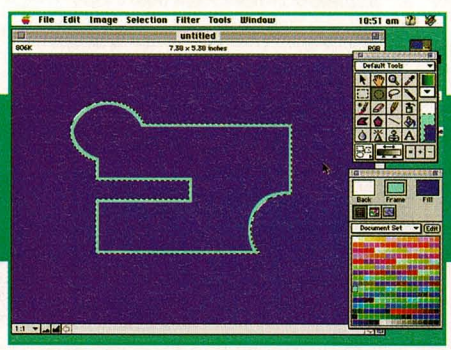


4 **Of course, you never make mistakes, but just in case you did, you can use the Eraser tool to "rub out" your image. Be careful, though, because the Eraser fills in with the background colour, which won't necessarily be white as here. So, you could end up with an extremely multi-coloured look to your image if you're not careful...**

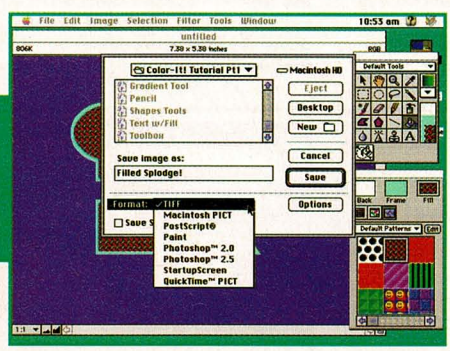


5 **These fancy brushes are all very well, but what's the point if your paintbox only has black and white? You can change the colour of a tool by clicking on the colour in the Toolbox, and you'll get this standard Colour Picker. Move the slider at the bottom to make the colours lighter or darker, then simply click on the colour you want.**

6 **Alternatively, you can use *Color It!'s* own Colour Palette. To do this, you must first choose Colors from the Tools menu. Now you can click on the colour you want from the palette. If you click on the icon that looks a bit like crazy-paving, you can select a pattern instead of a flat colour – great for jazzing up your image.**



10 **You don't have to work on a complete image – you can select areas using the Selection tools. To select a more complex area, you can combine them. Clicking on the little "+" button in the Toolbox will add your next selection to whatever is already selected. Clicking the "-" button will subtract it. If you use this carefully, it can produce some complex shapes.**



11 **When you've completed your masterpiece, you will of course wish to save it for posterity. Simply choose Save... from the File menu, and give it a name. You can choose to save in one of several file formats. TIFF is probably the best if you plan to give copies of your work to other people.**

Upgrade!

As a MACFORMAT reader, you can now upgrade to the latest *Color It! 3.2* for just £29.95, including UK delivery and VAT!* The CD version includes free pattern sets, clip photos, KPT demos and more. To order, all you have to do is use the Priority Order Form on page 142, specifying "Color It! 3.2 upgrade" and stating the appropriate order code:

CD version Order code: MFCL2C
Price (inc. VAT): £29.95
HD version Order code: MFCL2H
Price (inc. VAT): £29.95

***(This offer is also open to overseas readers, but please phone +44 1225 822511 for details of delivery charges before you order.)**

Send me a letter

Dear Mr/Mrs/Ms MACFORMAT Reader, you've been specially chosen by Derek Smith to learn how to create a mail-shot database in *FileMaker Pro 3*. Yours faithfully...

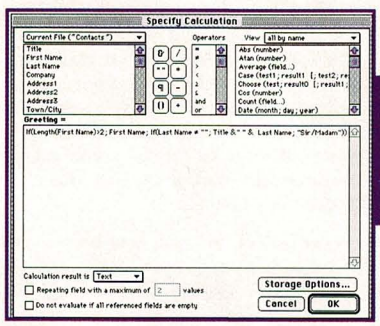
If you have a database of contacts, at some point you'll probably want to write a letter to someone, or create a mail-shot to a group of people. Although you could do both of these tasks from within *FileMaker Pro 2*, many people choose instead to mail-merge their databases with a professional word processor. This is because it used to be difficult to generate good-looking letters from *FileMaker Pro*. Also, you needed to create a new layout for every letter, which soon resulted in a bewildering array of layouts. This situation has now been rectified in *FileMaker Pro 3* with the introduction of two new elements.

First, *FM Pro 3* now has all the basic word processor tools such as tabs, indents, and alignments. This means you can produce all but the most complex of letters without needing to resort to a separate word processing package.

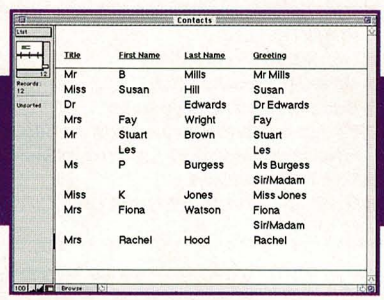
The second new element involves the relational facilities introduced with version 3, which enable data to be held

ON THE CD

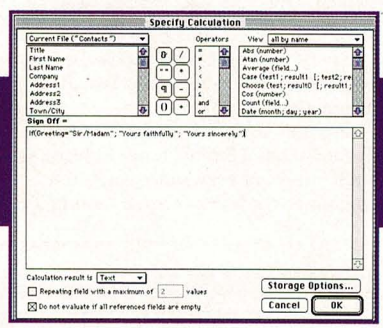
Both the databases for this *FM Pro* tutorial can be found in the **How To's** folder.



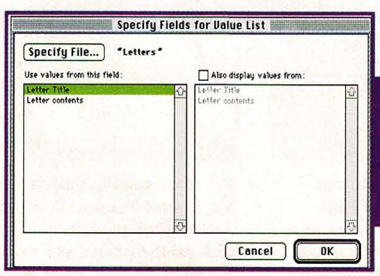
1 **The Greeting field calculation reads** If(Length(First Name)>2; First Name; If(Last Name ≠ ""; Title &" " & Last Name; "Sir/Madam")), **which means...**



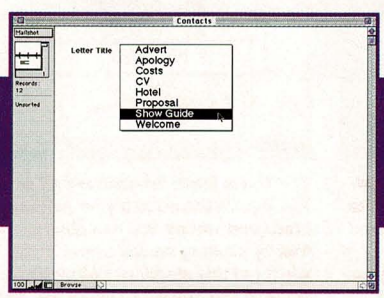
2 **If the person has a first name longer than two characters (to avoid just initials), use the first name. If they have a surname, use the title plus the last name; otherwise, use "Sir/Madam".**



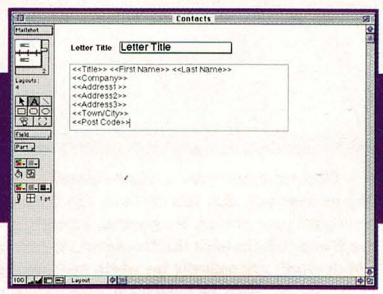
3 **You also need to calculate the sign-off at the end of the letter. The calculation reads** If(Greeting="Sir/Madam"; "Yours faithfully"; "Yours sincerely"), **which means...**



7 **The next step is to select Pop-up Menu, and then go to Define Value Lists. From here, you should click on Use values from a field, choose the Letters database, then finally select the Letter Title field.**



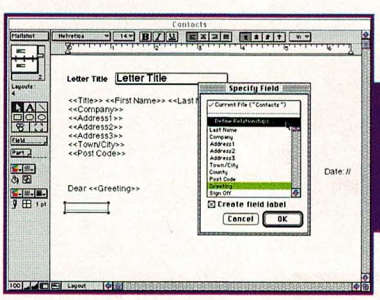
8 **This gives you a pop-up menu that lists all the letter titles in the Letters database (as we practised last issue). Make the field non-printing by selecting Sliding/Printing from the Format menu.**



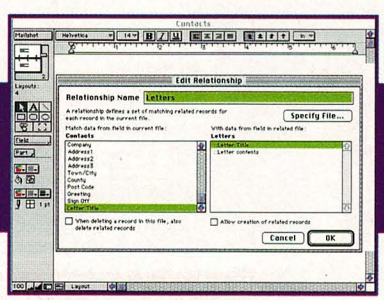
9 **Beneath this, create a text box and select Merge Field from Paste Special in the Edit menu. Select Title, First Name, Last Name, with a space between each, and merge the full address.**

Formatting

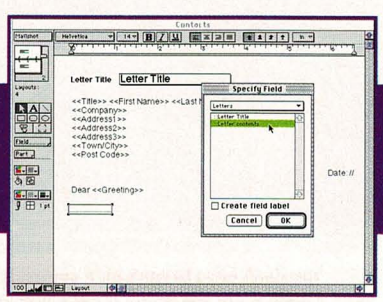
Any formatting you create in the Letters database, such as indents and tabs, will carry across to your Contacts database.



13 **Next on the page, you need the letter field (the main body of the letter). Drag the field label from the toolbar onto the page. From the pop-up menu at the top of the field selection box, choose Define Relationships.**



14 **Click New, then select the Letters database. Click on the Letter Title field in both databases. When you select a letter title from the pop-up menu (step 8), the appropriate letter will then appear on your screen.**



15 **When you click Done, you will see the two fields from the letters database. Select Letter Contents and enlarge the field so that it fills most of the remaining page, leaving you room for a sign-off.**

across several linked files. Although mail merging is a slightly unorthodox use of relationships, the benefit of version 3 is that you don't need to create a new layout every time you want to write a letter – simply type in key words, or select them from a pop-up menu, and the appropriate letter appears.

Creating a relational database is all about looking at your data, distinguishing logical units, and then breaking them down into separate files. In this instance, you need two files, one for contacts and another to hold your standard letters. The Letters database is very simple, containing just two fields: Letter Title and Letter Contents.

In the Contacts database, you create a mail-shot layout, and place a simple global text field on it. This field will appear in the form of a pop-up menu, displaying the titles of all the letters back in the Letters database.

You relate this global field to the letter title field in the Letters database. This means that whenever you choose a particular letter title from this pop-up menu, a relationship is formed between the two databases.

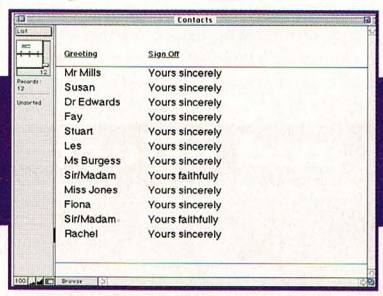
Next, on the same layout, you place another field, but not a field from the Contacts database. You need the Letter Contents field that exists across in the Letters database, based on the relationship between the Letter Title fields.

This has the effect that as soon as you choose a letter title from the pop-up menu, the corresponding letter appears in that layout. Hey presto! You have access to an unlimited number of letters, all from one layout.

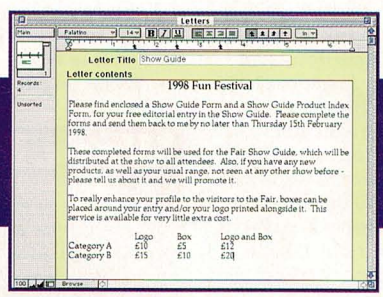
In the Contacts database, you'll also need to have separate fields for "first name", "last name", and "title". This does take a fraction more effort when you're inputting data, but it also enables you to automatically generate the appropriate greeting that always precedes a letter, such as "Dear John" or "Dear Sir/Madam". The greeting will always begin with "Dear", so you just need a Greeting field to calculate the next bit, which is where we pick up the story...

We need you

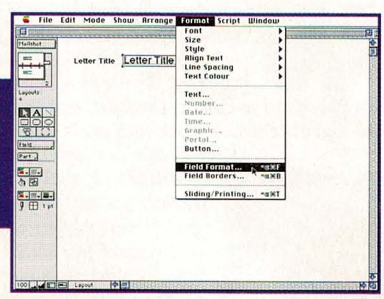
Many thanks if you've written in with your suggestions for future *FM Pro* tutorials. We would also like to hear about any clever solutions to problems you have discovered. The address to write to is: FileMaker Pro, MACFORMAT, 30 Monmouth Street, Bath BA1 2BW.



4 **If the greeting is "Dear Sir/Madam" then you need "Yours faithfully"; otherwise you must have used some form of the recipient's name, so you should use "Yours sincerely".**


Letters
Letter Title Show Guide
Letter contents
1998 Fun Festival
Please find enclosed a Show Guide Form and a Show Guide Product Index Form, for your free editorial entry in the Show Guide. Please complete the forms and send them back to me by no later than Thursday 15th February 1998.
These completed forms will be used for the Fair Show Guide, which will be distributed at the show to all attendees. Also, if you have any new products, as well as your usual range, not seen at any other show before - please tell us about it and we will promote it.
To really enhance your profile to the visitors to the Fair, boxes can be placed around your entry and/or your logo printed alongside it. This service is available for very little extra cost.
Logo Box Logo and Box
Category A £10 £5 £12
Category B £15 £10 £20

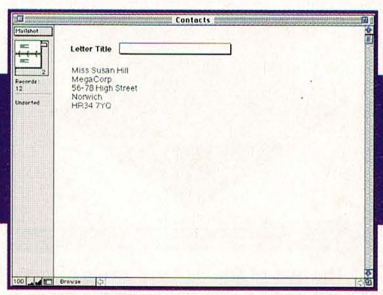
5 **Next, create a database for your letters. You only need two fields here: one to contain the body of the letter, and another for the title, which is used in the next few steps...**



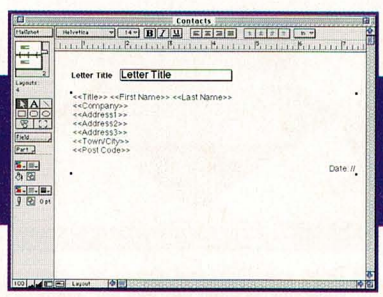
6 **Back in the Contacts database create a new blank layout, then create a global text field called "Letter Title". Select the field while in Layout mode and choose Field Format from the Format menu.**

Tabbing

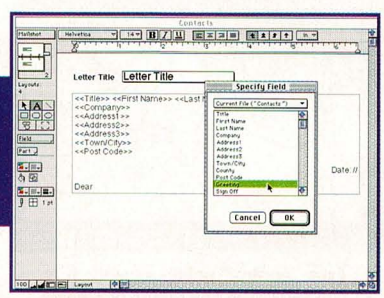
Tabbing in *FM Pro* takes you to the next field, not the next formatting tab. To do the latter, you need to press **[option] [tab]**.



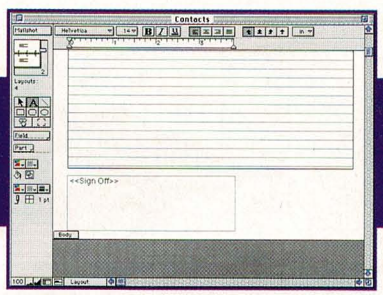
10 **The advantage of merged fields is that they automatically slide up and to the left if there is no data in any particular field. These are similar to *FM Pro 2's* sliding fields, but much simpler.**



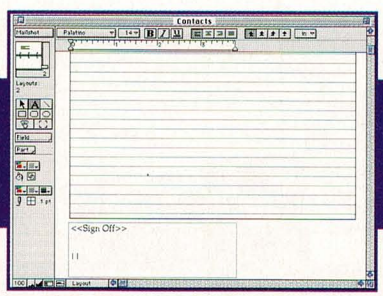
11 **The date can be added by choosing Date Symbol from Paste Special under the Edit menu. On screen, you'll see a pair of slashes, but this will always print out as the current date.**



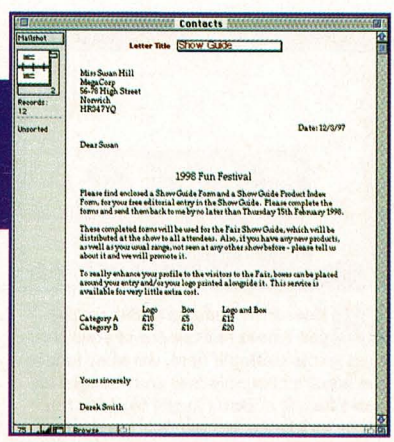
12 **Finally in this text box, type the word Dear followed by a space. Now merge the Greeting calculation field created earlier by choosing Merge Field from Paste Special under the Edit menu.**



16 **Now, you want to create another text box at the foot of the page and merge the Sign Off field by choosing Merge Field from Paste Special under the Edit menu. Then press [return] a couple of times.**



17 **Now, select User Name Symbol from Paste Special in the Edit menu. This will automatically enter the user name (shown as two lines), which you set up by choosing Preferences from the Edit menu.**


Contacts
Letter Title Show Guide
Miss Susan Hill
MegaCorp
56-78 High Street
Norwich
HR34 7YQ
Date: 12/3/97
Dear Susan
1998 Fun Festival
Please find enclosed a Show Guide Form and a Show Guide Product Index Form, for your free editorial entry in the Show Guide. Please complete the forms and send them back to me by no later than Thursday 15th February 1998.
These completed forms will be used for the Fair Show Guide, which will be distributed at the show to all attendees. Also, if you have any new products, as well as your usual range, not seen at any other show before - please tell us about it and we will promote it.
To really enhance your profile to the visitors to the Fair, boxes can be placed around your entry and/or your logo printed alongside it. This service is available for very little extra cost.
Logo Box Logo and Box
Category A £10 £5 £12
Category B £15 £10 £20
Yours sincerely
Derek Smith

18 **Once you've found a group of contacts from the Main layout, you can swap to the Letters layout and select the desired letter from the pop-up menu. The very last step is to print all your current records. Job done!**

Draw your own conclusions

Fantastic shapes and simply irresistible effects are only a few seconds' work with *PageStream's* fantastic drawing tools. To help you get the most from MACFORMAT 49's brilliant Cover CD bonus, Nial Grimes shows you how to design for the future.

Well-designed pages thrive on elements such as pictures and objects that can break up an endless flow of text and make a drab document sparkle. As we saw last issue, *PageStream3.2SE* is a dab hand at creating attractive objects to fill your pages, but there are times when you need something a bit more flexible – perhaps like the icon to the left.

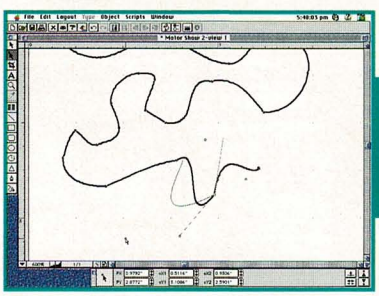
Fortunately, there's no need to reach for a drawing package, because all the tools you need to design your own shapes and objects are included in *PageStream 3.2SE*. (That's how we made this one!) And that's not all: you can even decide the order these shapes should appear on the page and then use them to mask off parts of other pictures for real artistic effect! Whatever your level of skill, *PageStream* is a master at turning seemingly complex tasks into fun and easy operations. The techniques we'll show you are simple to follow, and can easily be applied to any document you design. So put on your creative cap and let's get started!

Wrecks and effects

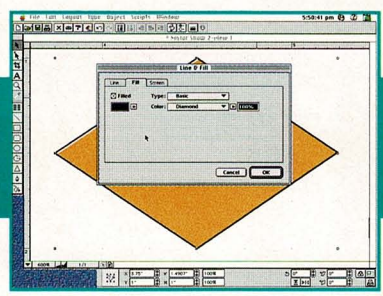
Don't forget to look in the Edit Palette (at the bottom of the screen) for effects that you can apply to your frames and objects. All objects can be rotated, slanted and twisted using the little arrows. Be careful, though, as twisted frames can take some time to display – the older your Mac, the bigger the penalty. It's best to leave any serious fiddling until your document is nearly finished.

Zoom!

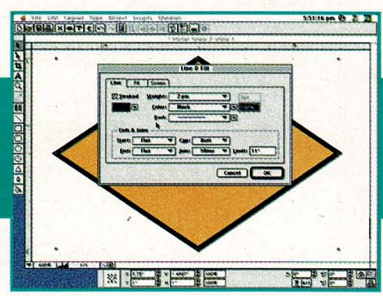
Don't forget that you can sneak a closer look at any object on your page using the Magnifier tool – either click a spot, or drag a box and *PageStream* will enlarge it to fill the document window.



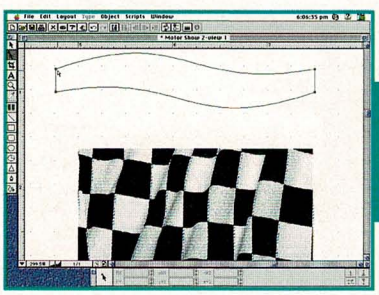
7 Extra "control" points appear when you select the end points of a curve, as shown above. Basically, the further a control point is away from the line, the sharper your curve will be. After some experimenting with this technique you'll soon get the hang of it.



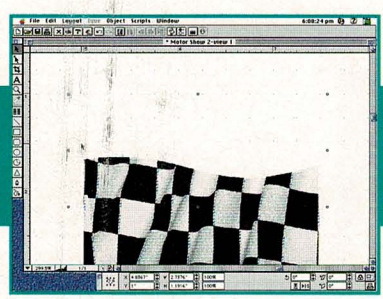
8 Once your lines and curves join up, they can be filled just like any other object. Either double-click on the object outline or select the frame and choose **Line & Fill** from the **Object** menu. You'll find plenty of tips on using fills in last issue's *PageStream* tutorial.



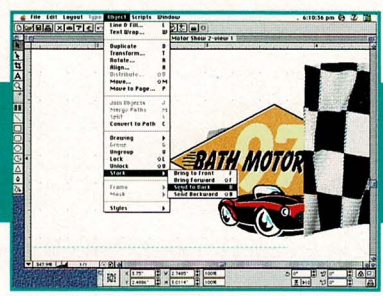
9 The type of line that surrounds objects can also be changed using the same box – click on the **Line** tab at the top. Here, we've just thickened the line a little,. Custom ends (such as arrows or diamond shapes) and colours are only a couple of mouse-clicks away. Try it and see.



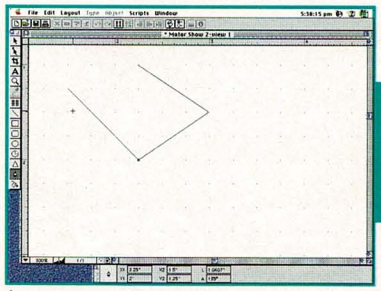
13 Now draw a shape of the section you would like cut out of your picture. In the example here, we want to turn the square chequers into something a bit more flag-like. Don't forget to close the paths by joining the last point to the first.



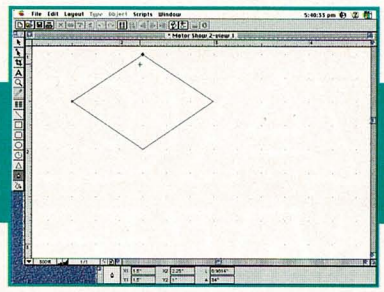
14 Double-click on the object using the Null pointer. Pick a fill that matches your background colour. Go to the **Line** tab and double-click on the **Line** check-box to remove the outline. Slide the object over the picture and it is neatly masked.



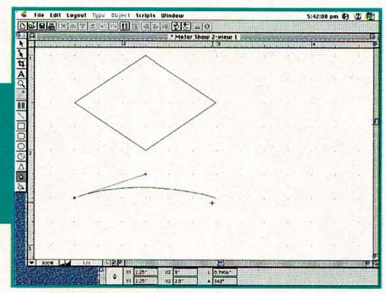
15 As your page fills up with frames, you'll need to watch which items are masked. This depends on the stacking order. To put a frame behind all others on the page, select it and choose **Send to Back** under **Stack** in the **Object** menu.



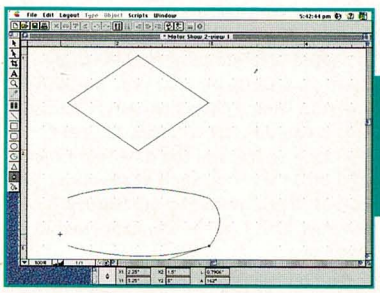
1 Creating your own objects is simple – select the Pen tool (it's second from the bottom of the icon panel) and click the mouse button to make a starting point. Then move the mouse to where you would like the next line to start, and click again.



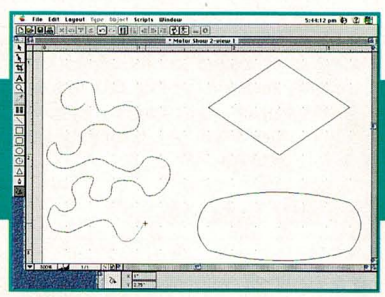
2 You can either stop at the line stage by pressing **[escape]**, or click on the starting point again to "close" the path and make a completed object, like the one shown above. Objects can be as simple or as complex as you like.



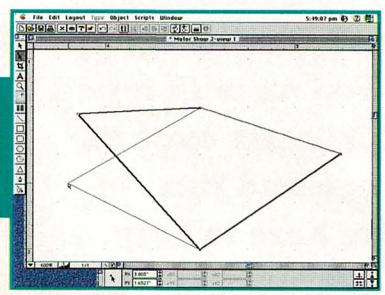
3 Curves can also be formed with the Pen tool, by holding the mouse button down as you drag. When you are ready to form the curve itself, just let go of the button and see what curvy things happen when you move the mouse!



4 To link another curve onto the end, hold and drag again. Lines and curves can be mixed freely – remember, click for a line and hold for a curve. You may find it easier to position your points if you disable **Snap to Grid** – it's in the **Layout** menu.



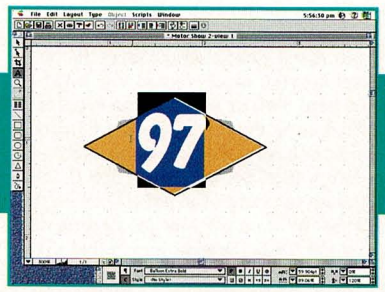
5 The Freehand tool (at the very bottom of the icon panel) is an even more creative way to draw curves; if you've got a steady hand just hold down the mouse button and use it like a pencil to scribble anywhere on the page. It might just take a bit of practice.



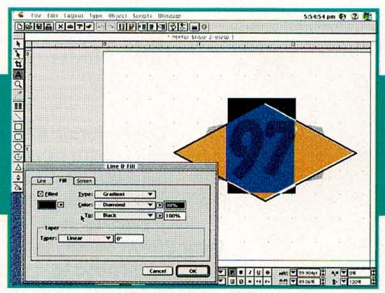
6 To put a completed object in a frame that you can move around the document, simply click the Null pointer icon (top tool in the tool palette). You can make changes by selecting the frame, then using the Reshape tool (second down) to click on a line and drag the end points.

Look back!

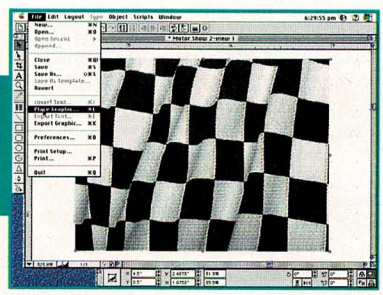
This tutorial is the third in a series showing you how to use *PageStream 3.2SE,* the exclusive *complete* DTP package that was yours free with MACFORMAT 49. If you missed that issue, turn to page 142 for details of how to order a copy – but act soon, because they're going fast!



10 With such beautifully-coloured objects on the page, you will probably want to treat your text to some similar effects too – and it's easy when you know how. First, select the Text tool (fourth from the top in the tools palette) and highlight a few words.



11 Now, choose **Line & Fill** from the **Type** menu – this works in the same way as the **Line & Fill** box you are used to using, but operates on text instead of objects. Don't be afraid to play with the settings – the linear and radial fills can create some stunning effects.



12 The drawing and fill techniques you have just learned can even be used to mask off parts of pictures that you don't want to see. The first step is to put an image on the page using **Place Graphic** from the **File** menu.

Upgrade now!

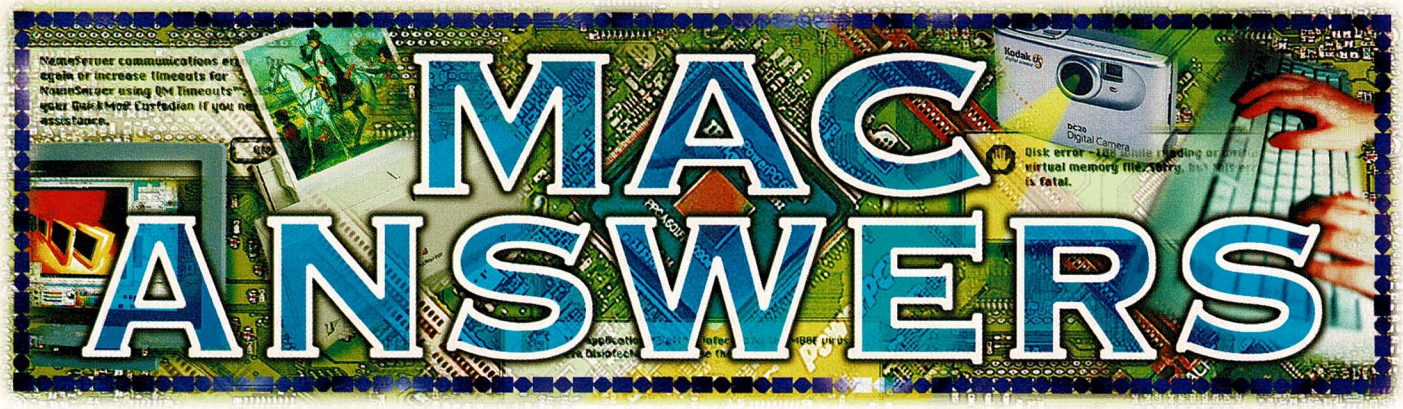
MACFORMAT 49's bonus Cover CD brought you an exclusive "Special Edition" version of *PageStream 3.2.* As a MACFORMAT reader, you can now upgrade to the complete latest version, *PageStream 3.3,* for a very special price. For details of this great offer, turn to page 138.

16 Once you have a completed logo or collection of objects, drag a box around them with the Null pointer, and choose **Group** from the **Object** menu. The whole lot can then be dragged around and sized in one go – simple!

Don't forget BME!

BME's range of filters ensures that you get the perfect picture every time.

Take a closer look inside your *PageStream* folder and you'll find a little application called *BME.* It's designed to make your pictures look as impressive as possible on the page, and can create some pretty stunning effects. At a basic level, you can increase brightness and contrast so your pictures look better in print. There are also more powerful filters, to give your images an embossed effect, or sharpen them up. Don't forget to save your images under a new name using the **Save As** menu option, or the original will be gone forever.



Sick of your System Folder's shenanigans? Can't start up your Mac? Fed up with type 11 errors? MACFORMAT experts Lindsay Bruce and Jim Chandler are here to help...

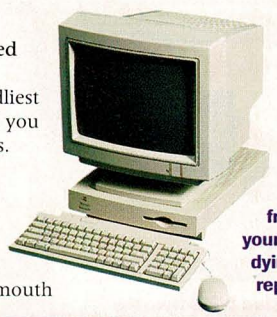
It's a remarkable piece of technology, your Mac. It's a finely-tuned construction engineered from rare earth metals and plastics. The Mac OS itself is designed to be easy and pleasurable to use for even the most amateur of computer users. Why then, do you have to fiddle about with SCSI, reinstall System software, zap the PRAM, rebuild the Desktop, and perform countless other pieces of technical wizardry? What happened to the computer for the rest of us?

The Mac is still the world's friendliest computer – no disputing that – and you don't *have* to know how it all works. That's why MacAnswers is here, to provide you with the solutions to problems that might crop up now and again. If you have a problem with your Mac, write to us at MacAnswers, MACFORMAT, 30 Monmouth Street, Bath, BA1 2BW. Alternatively, e-mail us at **macformat@futurenet.co.uk** or fax us on 01225 446019. Sorry, but we can't answer technical questions personally because the Dep Ed's Mac is still crashing left, right and centre, and the poor man is reduced to copying a file at a time onto his Mac...

The big turn off

PRAM

Q *The on/off switch on my Performa 475 has begun to malfunction after two years' use. Most of the time it won't boot up, stopping after the opening chime, and when it does succeed, it corrupts the date and time to 27/08/1956! Why should it affect the time but, according to* Disinfectant, *nothing else? Can I replace the switch? Is it safe to short-circuit this problem (ha, ha) and switch the Mac on and off at the mains?*
Noel J A Jones
North Elmham, Norfolk



The Performa 475 and LC 475 have a hardware bug that may stop your Mac from starting up if your PRAM battery is dying. You need to replace it.

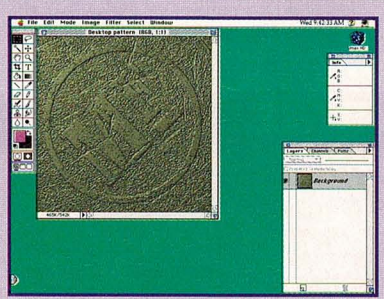
A This is not your power on/off switch but your PRAM (Parameter RAM) battery. The PRAM is a small battery-powered area of memory that stores start-up settings and the date and time for your Mac. When the battery runs flat – as it can do after a couple of years' service – you'll find the date and time and other settings, such as monitor colour depth, revert to the factory settings. This is what has happened in your case.

Unfortunately, when this happens on the Performa 475 or LC 475, it can prevent the Mac starting up. The solution is simple: drag your Mac along to an Apple Authorised repair centre and have the battery replaced. This should cost you between £10 and £20.

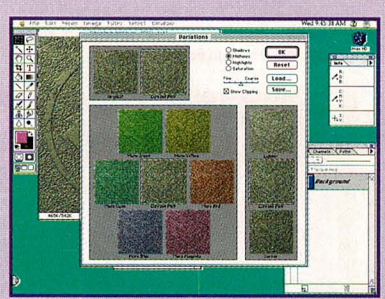
Whatever you do, *never* use the mains switch to turn off your Mac (unless you're in the most dire circumstances). Doing so will send a power spike through your Mac's components that could be fatal for your motherboard, the RAM, the hard disk, or the monitor. What it will do is screw up the directory structure on your hard disk and – quite likely – corrupt files. So, in a word, don't! Always use either the power key on the keyboard or on the Mac for starting up, and the **Shut Down** command in the **Special** menu for shutting down. If the latter won't work, use the **Reset** button

Customising the Desktop

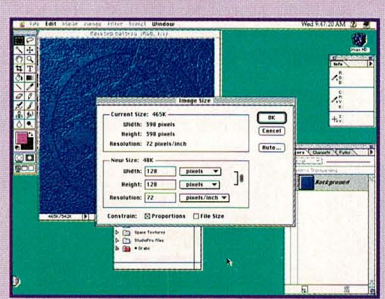
Fed up with your Mac's Desktop? You could brighten it up with your own customised pattern. A neat little Control Panel called Desktop Patterns comes with System 7.5. It has 75 different patterns, ranging from simple single colours to tartan and pebbles on a beach – or you can add your own. Here's how to do it:



1 Create the pattern you want in grey-scale in a paint program. We're using *Photoshop*, but you could use *Color It!* (on the MACFORMAT 50 second Cover CD). Don't worry about the size of the image at the moment, just make sure that it's a perfect square, and that the edges match up so the pattern will tile without seams.



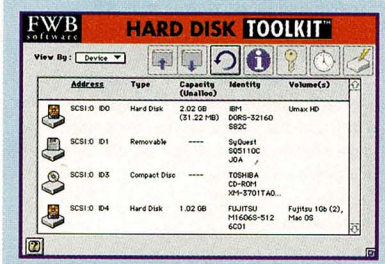
2 Once you've got the basic pattern, you can set the colour to precisely the way you want it. Doing it this way round means that you can change the colour later if you don't like it. We've picked a deep blue, which we'll adjust using the Brightness/Contrast controls (similar controls will be in whatever program you use).



3 It's easier to work on a slightly larger document when you're creating the pattern, but if you want to use it on the Desktop you need to make it 128 x 128 pixels in dimension. Also, make sure that your design isn't too intricate, because there's a risk that the fine detail will be lost in the final image.

Bug Bytes

Hard Disk ToolKit and System 7.6
FWB Hard Disk ToolKit 2.0 is incompatible with System 7.6, and use of it could result in a loss of data on your hard drive. This bug has been fixed, and an updater for retail-only versions (meaning if you bought it separately and it wasn't bundled with a drive) is on our Cover CD. If your edition came bundled with a drive, contact your supplier for an update.
Contact: Computers Unlimited on 0181 200 8282, or check FWB's Web site at **http://www.fwb.com/**


FWB software
HARD DISK TOOLKIT™
View By: Device
Address
Type
Capacity (Usable)
Identity
Volume(s)
SCSI:0 ID0 Hard Disk 2.02 GB (31.22 MB) IBM DORS-32160 S82C Umax HD
SCSI:0 ID1 Removable ---- SyQuest SQ5110C J0A
SCSI:0 ID3 Compact Disc ---- TOSHIBA CD-ROM XM-3701TA0...
SCSI:0 ID4 Hard Disk 1.02 GB FUJITSU M1606S-512 6C01 Fujitsu 1Gb (2), Mac OS
Don't use *FWB 2.0* with System 7.6.

Slow Ethernet
Some problems have been reported with PCI PowerMac logic boards, which could result in extremely slow Ethernet connections. Apple says that some motherboards in the PowerMac 7200 and 7500 series are affected, but we've had reports of similar problems on the 8500 and 9500 series. The quality issues that related to the defective motherboards slipping through have now been fixed. If you think your Mac could be affected by this, contact your local Apple dealer to arrange for a replacement board.
Contact: Local Apple dealer, Apple Assistance Centre on 01753 615999, or go to **http://www.apple.com/**

Multiple System Folders
After installing System 7.6, you may find duplicate System Folder icons on your Mac – these are just icons, not full duplicates! This is not a bug with 7.6, but related to Desktop Printing. If you have installed Desktop Printing (part of System 7.5.2 and above) but have not selected a printer in the Chooser, you may experience this strange behaviour. Either disable Desktop Printing or select a printer in the Chooser to resolve this.
Contact: http://til.info.apple.com

PowerPC Interrupt Extension
There was a bug in System 7.5.2 and above that could cause your Mac to freeze up for no apparent reason. Apple's **PowerPC Interrupt** Extension has now fixed this, and is included in 7.6. We've put the Extension on the Cover CD inside the **System Updates** folder with the **Resources** folder.
Contact: http://til.info.apple.com/

if you have one (it's the one on the Mac's case with a small circular indent – not the on/off switch), or **[Command] [Option] [Power key]** on the keyboard to force a restart.

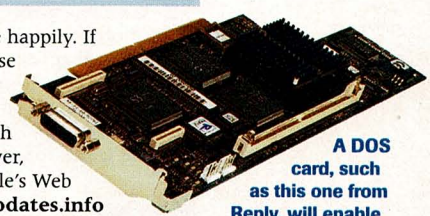
By the way, *Disinfectant* won't report problems other than virus infections and perhaps the odd damaged file. For a more comprehensive disk check, you need *Norton Utilities*, a suite of programs for checking, repairing, and optimising your Mac's hard disk. *Norton Utilities* costs £81 and is available from Computers Unlimited on 0181 200 8282.

DOS-ing around

PC exchange

Q *I access all my DOS floppy disks using* PC Exchange *with System 7.1. Will it also mount Windows/DOS CD-ROMs?*
J Allijn
Rotterdam, Netherlands

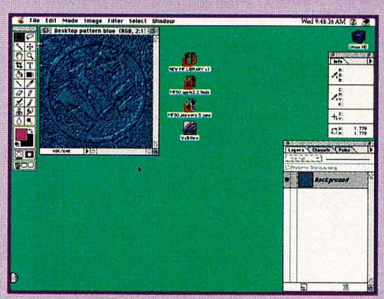
A *PC Exchange* works with floppy disks and most removable SCSI disks, enabling you to read data saved to DOS or Windows format disks on your Mac. Apple has decided to use a slightly different system for CD-ROMs, though. Apple supplies some useful software with its own CD-ROM drivers, which enables Macs to read CD-ROMs that aren't formatted to the Mac's own HFS format. Take a look in the **Extensions** folder inside your **System Folder**. You should see a file called **Foreign File Access**. As its name suggests, this enables your Mac to recognise non-Mac file systems. There should also be three related files, called **Audio CD Access** (which supports music CDs), **ISO9660 File Access**, and **High Sierra File Access**. ISO9660 and High Sierra are formats that are widely used on PCs and machines that run the Unix operating system. If these files are present, your Mac should be able to read PC CD-ROMs quite happily. If you don't have these files, and they're not on the driver disks that came with your CD-ROM player, get them from Apple's Web site at **http://swupdates.info.apple.com/**. If you don't have a modem, take a trip to your local Apple Centre (but you'll probably be charged for them here). *PC Exchange* won't enable you to run Windows or DOS applications; for that you need either Insignia Solutions' *SoftWindows* (£387, contact Insignia on 0800 667706) or a DOS card (see MF 46 for a feature on DOS cards).

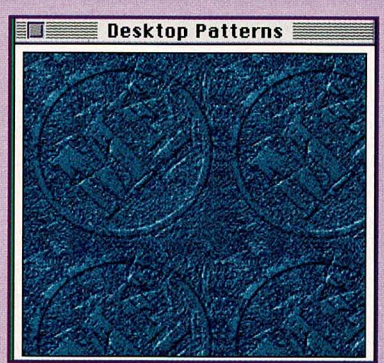

A DOS card, such as this one from Reply, will enable you to run PC software on your Mac. It's essentially a PC on a card. Just don't phone us asking about Config.sys files... See "DOS-ing around".

Find that file!

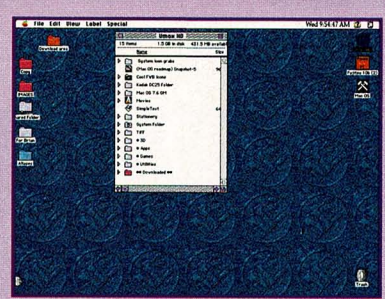
Aliases

Q *Is there any way to exclude aliases being listed when you search for files* ➤


4 And after all your hard work, the end is in sight – here's the finished pattern! You might need to change the number of colours it uses so that it will display properly. We've set this one to 16-bit (thousands of colours), but if your monitor is set to 256 colours, you should change the image to 8-bit.



5 Copy the finished tile to the clipboard and open the **Desktop Patterns** Control Panel. Paste the image into the window and it will appear at the end, automatically tiled and ready to use.


6 Now, select the **Set Desktop Pattern** button in the **Desktop Patterns** Control Panel and – hey presto! – your own personalised Desktop! You may need to go back and experiment with the overall colour to get the best working background, but you now have the perfect basis for great work!

System sorrow

If you're having problems with conflicting Extensions or any other System Folder related problem, then take a look at the 100-page book included free with this issue. It tells you all you need to know to solve those System Folder blues!

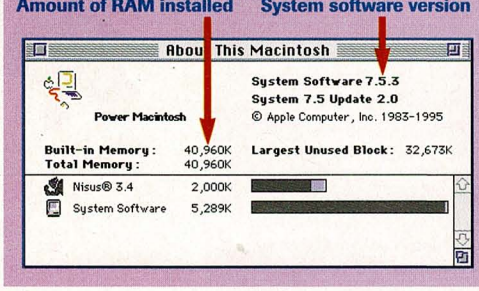
The do-it-yourself problem-solving guide...

One of the most common causes of problems on your Mac is Extensions or Control Panels clashing in your System Folder. It's easy to check if this is the case. Restart your Mac and hold down the [shift] key. Release the key when you get the message, "Welcome to Macintosh. Extensions off." If everything now works, then the problem is likely to be an Extensions conflict.

The only way to work out which item is the culprit is by trial and error. Remove a few Extensions or Control Panels, then restart your Mac, without holding down [shift]. Keep on doing this until the problem no longer occurs and you've found the offending software.

If this doesn't work, try rebuilding your Desktop. Start up holding down [command] and [option]. You'll get a message asking if you want to rebuild the Desktop. Click OK, wait for it to finish and see if this solves your problem.

If you're still stuck, use the form on page 63 to write to us. We'll need to know a few facts about your Mac, so when you're in the Finder, select About This Macintosh from the Apple menu – the crucial things to note are shown at left.



*using **Find File**? They simply make the list longer to plough through!*
J Binns
Bath, Somerset

A Yes, there is. Click on the **More Choices** button in **Find File** to bring up further search criteria. Select **Kind** from the pop-up menu on the left, **Is Not** in the centre menu, and **Alias** from the menu on the right. This will limit the search to non-alias items.

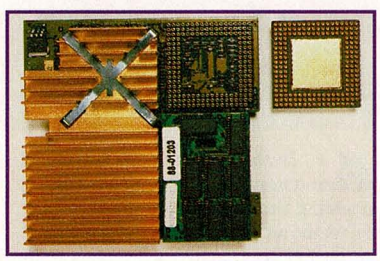
Afterburner!

Upgrading

Q *I recently bought a copy of both* F/A-18 Hornet *and* Hellcats *for my LCII, and although the games ran reasonably well, they were jerky to play. To speed them up, I bought a Sonnet Booster Accelerator Card, replacing the 16MHz 68030 CPU with a 33MHz 68030 processor. I expected a performance increase of at least 200%. However, when I ran* F/A-18 *again, the change in speed was minimal – not even as fast as an LCIII. I went to my local Apple dealer, who said that as my Mac is using Virtual Memory, the problem could be a fragmented hard disk. I then bought* Norton Utilities *and defragmented the disk, but there's still no change.*
Danny Gasperini
via Futurenet

A The problem doesn't lie with your Mac, but with your expectations of what the accelerator can do. Merely doubling the clock speed of your processor won't necessarily double the speed of your machine. There are other factors that can affect the speed. For a start, although the LCII and your accelerated LCII both use 32-bit 68030 processors, they only have a 16-bit data path to access memory. This means that they have to access memory twice to fetch a single 32-bit instruction for the processor. This causes a bottleneck, and unfortunately an accelerator card won't cure this. The LCIII has a 32-bit memory data path, so it can use its memory much faster, which improves performance dramatically. Your accelerator should improve performance slightly, but it certainly won't double it.

Virtual memory will always be slower than RAM. If you really need the extra speed, it's worth investing in extra RAM. The LCII can be expanded up to 10Mb, with two 4Mb SIMMs, which you can pick up for around £15 each from most Mac resellers.



Buying an upgrade for your Mac will not make it as powerful as a brand-new machine because it has to work with the existing hardware. See "Afterburner!"

Mac not good enough?

Start-up disks

Q *I want to be able to use several operating systems on my Mac, including the Mac OS, the PPC version of Linux, and other Systems that run as the "main" System (such as the forthcoming BeOS). I would like to have separate disks for each OS, containing only the System and its associated components.*

I originally wanted to buy several 200Mb SCSI hard drives. As trying to get anything less than 1Gb these days is impossible, I decided to look at removable solutions such as the Zip drive. Could you tell me whether this type of drive would be fast enough as a start-up disk?
Andre
Via e-mail

A That's something of a specialised question, but an interesting one nonetheless. It is not recommended to install more than one version of an operating system onto a single disk, let alone two entirely different operating systems, so your notion of using separate disks for each is a good one. Alternatively, you could buy a 1Gb or 2Gb disk and partition it into different volumes. This would enable you to store two or three different operating systems on one disk, but on separate volumes so that the Mac doesn't get confused. A 2Gb drive costs around £250 to £300.

The PowerPC version of Linux (a type of Unix operating system) is available to Apple developers who wish to use Macs for Unix programming. MkLinux can be downloaded from Apple's Web site at **http://www.mklinux.apple.com/**. But be warned that it's over 300Mb! You need either a very fast Internet connec-

System 7.6 and hard disk drivers

System 7.6's installer asks you to update your hard disk driver before installing. If not, you could lose data.

Apple has posted details in its Technical Information Library (http://til.info.apple.com/til/til.html/) of a problem with System 7.6 and older versions of *Drive Setup* and *Apple HD SC Setup*. If you do not update your hard disk's driver using the utilities that come with System 7.6 before installing it, your Mac may not start up and you could lose all the data on the drive. Apple says the only solution is to boot up from the System 7.6 Disk Tools floppy or System CD and reformat the hard drive. This means, of course, that you'll lose all your data. Another possible way to recover files (although we haven't tested this one) is to install a third-party driver such as *FWB ToolKit* or *Silverlining* without initialising the drive. It may then be possible to recover your lost files.

On the Cover CD

On this issue's MacFormat Cover CD you'll find a host of utilities that can help diagnose and prevent problems that are occurring on your Mac. These are just some of the regulars featured on the CD:

Disinfectant scans your hard disk for all known viruses.

ResEdit can be used to verify the integrity of most files' or applications' resource forks and enables you to hack into things you really shouldn't. Don't use this unless you know what you're doing and always work on a duplicate of the file!

StuffIt Expander enables you to decompress files archived by the *StuffIt* application, which are common on the Internet.

TechTool rebuilds the Desktop, zaps the PRAM and presents you with detailed technical information about your Mac.

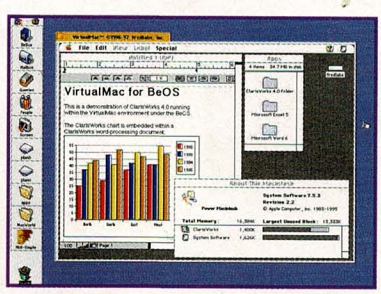
tion or to sign up as an Apple Developer and wait for it to arrive in the post on CD-ROM. For more details, contact Apple on 0181 569 1199.

Switching between different operating systems on the Mac is usually handled by a host Extension or application installed in your System Folder. You can then use this to toggle between the Mac OS and another operating system on the next restart. At present, you can run a developer release of MkLinux, AIX (another Apple Unix variation, now discontinued), and a developer release of BeOS on the Mac as well as any version of System 7.

It's wise to keep duplicate System Folders on separate disks and use the **Startup Disk** Control Panel to switch between them. If you don't have two disks, a little utility made by an Apple programmer could help you out. *System Picker* enables you to switch between two System Folders that are on the same disk by altering the boot blocks of your start-up disk. (Boot blocks are the first few sectors of your hard disk, and store information about the volume, including the location of your active System Folder.) *System Picker* is not official Apple software and is not supported, but it's handy and you'll find it on our Cover CD inside the **Resources** folder.

In fact, you can use just about any sort of drive as a start-up disk; the only limitation is speed. Obviously you'll want your start-up disk to be as fast as possible (if you've ever booted from a floppy or a CD, you'll know that tedium sets in after the first 30 seconds because it takes an age to load the Finder). Iomega says that you can't use a Zip drive as a boot disk, but we've seen it done by using a third-party software driver such as *Formatter-One Pro* on the cartridge in question.

The Zip drive, though, is hardly a speed demon and holds only 100Mb – fairly paltry considering a good-sized System Folder can easily take up that much. We checked one of ours at the time of writing and it occupied 123Mb of disk space! A better bet would be to use the aforementioned partitioned hard drive or a Jaz drive, which can accommodate 1Gb of data on a cart that costs a mere £50 or so. A Jaz drive costs £300 to £400 depending on which manufacturer you choose. For more details, visit Iomega's Web site at **http://www.iomega.com/** or take a look at our group storage tests featured in MACFORMAT 43 and 48. **MF**



Want to run alternative operating systems such as BeOS (left) on your Mac? Better get another hard drive then. See "Mac not good enough?"

Trouble-shooting keystrokes

Having a few keystrokes up your sleeve is incredibly handy when you run into trouble, and it makes you look dead flash in front of all your mates in the office. Ahem... yes.

Startup keystrokes – hold down during Startup
[shift] Turns Extensions off.
[command] [option] Rebuilds the Desktop files.
[command] [option] [shift] [delete] Forces your Mac to start up from a disk other than the internal hard drive (assuming you have another disk with a System Folder on it).
[command] [option] P R Zaps the PRAM (Parameter RAM – a chip inside your Mac which stores the date, time and some details about your Mac's hardware).
[command] [option] T V Switches your Mac's screen display from the monitor to a connected television set (Audio Visual Macs only).

Ask Mac Answers...

If you send in a question for the MACFORMAT experts to solve, please fill in and include this form (or a copy of it). And please make sure that you include all the relevant details – version numbers of software and so on – so that we have the best chance of helping you. Send your form and question to: MacAnswers, MACFORMAT, 30 Monmouth Street, Bath BA1 2BW; or fax it to us on 01225 446019.

Name .....

Address .....

.....

.....

.....

.....

Your Mac
(For example, Performa 475, 7600/120, PowerBook 5300):

.....

System version
(see **About This Macintosh** screenshot on page 62): .....

Amount of RAM
(see **About This Macintosh** screenshot on page 62): .....

Are you using Virtual Memory? ..... **YES/NO**
(This is accessed from the Memory Control Panel under System 7)

Do you have 32-bit addressing or Modern Memory Manager (PowerMacs only) turned on? ..... **YES/NO**
(This is accessed from the Memory Control Panel under System 7)

Details of any relevant hardware which could help us to answer your question:

.....

.....

Now, use this space to describe your problem or question. Please include as much relevant information as possible, and continue on a separate sheet if necessary.

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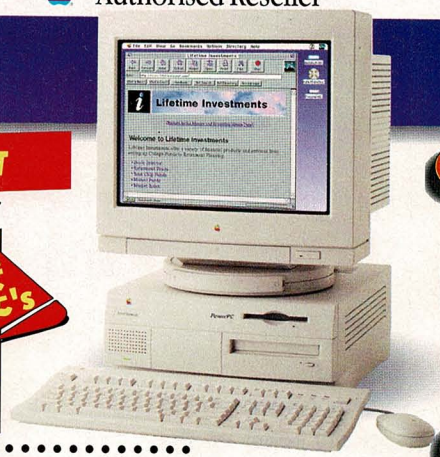

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Reviews

Whether you're looking for a new Mac compatible computer, the latest 3D software or a good game, MACFORMAT will help you make the right choice!

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Not just new Mac-compatible computers, but complete bundled solutions – see page 68.

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With over 50 Macs and clones to choose from, how do you start to look for a Mac that suits you? MACFORMAT looks at a range of new 200MHz and faster "solutions" to help you decide.

Every month there seem to be more Macs to choose from, and the prices keep falling while performance continues to reach new heights. To simplify the choice, manufacturers are aiming bundles at specific areas of the market. This new "solutions" approach – a term coined by Apple with its last series of Performas – is designed to make life easier for you, whether you are a home or corporate Mac user. So, what are the choices available and do they represent value for money?

If you are a first-time Mac buyer, you should consider a solution that offers flexibility and lots of bundled goodies. You want a system that requires the minimum of fuss to set up and won't cost you an arm and a leg.

If you already use a Mac at home and just want more power, bundled software is probably less of a priority, but you'll need the ease of setting up. You should consider the power of the machine, its upgrade potential, and its features.

If you are a corporate or experienced Mac buyer, there are stripped down Macs that offer high performance without the extravagant bells and whistles of bundled software and unnecessary features. Which one you choose depends entirely on your needs. Bear in mind that many distributors do bundle deals with other hardware such as monitors, printers and scanners. These days, it's not just the Mac itself, but what you get with it that counts. We take a look at some of the solutions available on the market and assess their value for money.

If any of the terms here are unfamiliar see "The Jargon" on page 73.

Last issue...

In issue 50 of MACFORMAT we printed details of every single Mac and clone available on the market – including the four on review this issue. If you missed last issue, turn to page 142 to find out how to get a copy.

Clones and System 7.6

As you look through the next few pages, you'll notice that none of these clones comes with System 7.6, even though it's been out for a few months. In fact, most of the clones come with System 7.5.3 instead of System 7.5.5, the latest pre-7.6 update to the Mac OS. Why isn't either of these versions bundled with these Macs?

The reason is that System 7.6 does not support the motherboard design which these Macs are based on. System 7.6.1 will change this and will support all Macs. A special enabler file is needed to run System 7.5.5 on these Macs and the manufacturers don't have it yet. However they've all said that they plan to ship System 7.6 with new machines in the next couple of weeks. Check when you order.

PRICE	ON SALE	CONTACT	WEB SITE	WARRANTY
£1,527	Now	MCM Distribution on 0171 723 7221	http://www.powercc.com/	one year

Power Computing Power Base 240

A 240MHz Mac for little more than £1,500? The PowerBase 240 could offer you all the speed you need, but how does it perform?

The PowerBase 240 is Power Computing's answer to Apple's Performa 6400. It comes in a mini-tower casing similar to the more powerful 604e-based PowerTower systems that Power Computing offers.

The case immediately shouts "PC compatible" – functional and dull. Inside it boasts a 240MHz 603e processor mounted on a daughterboard. However, the PowerBase is based on an Apple motherboard design with no provision for a daughterboard, so Power Computing has used one of its own proprietary design. This means you can't swap the processor for a more powerful 604e on a standard replacement daughterboard, only one of Power's own design. As yet, upgrades aren't available, but UK distributor MCM says that these will be appearing as faster processors come out.

To get inside, you take four screws off the back, which needs either a screwdriver or a coin. This is a better approach than the Computer Warehouse clones (pages 70 & 71), but not quite as simple as the catches on Apple's PowerMacs. Once inside the PowerBase, the slots are easy to get at, although for some reason Power has put the 256Kb Level 2 cache above the processor daughterboard, and you need to remove the processor fan assembly to get at it. Incidentally, on our test machine this fan caused an irritating buzzing noise as it vibrated against the daughterboard. We easily fixed this by putting a bit of paper in the gap where the two meet, but it's a pain nonetheless.

The PowerBase also sports three PCI expansion slots, three RAM slots, which will accept a total of 160Mb of EDO-RAM DIMMs, a 1.2Gb IDE internal hard drive, and an 8x speed CD-ROM drive. The last is disappointing as 12x speed or faster now seems standard fare with a new Mac. For graphics the PowerBase has 2Mb of on-board VRAM, which is not expandable, but this is enough to display millions of colours at 1,024 x 768 resolution. The technical spec is completed by three empty internal drive bays – two 5.25-inch and one 3.5-inch – towards the front of the Mac.

From port to port

Around the back of the case things become more interesting. All of the standard Mac ports are there: ADB (for keyboard and mouse), printer, modem, SCSI, microphone and headphone. You can also fit a PC-compatible keyboard and mouse, although ADB-compatible devices are already supplied. There's no Ethernet network port, which means you're stuck with LocalTalk if you're on a network. The PowerBase 240 scores extra points for having both SVGA (found on PC-compatible monitors) and Mac monitor ports as standard. This broadens your choice of monitors without the need for fiddly adaptors.

The software bundled with the PowerBase includes the obligatory *ClarisWorks 4.0*, FWB *CD-ROM ToolKit* and *Hard Disk ToolKit*, *Quicken SE*, the *Grolier Multimedia Encyclopedia*, *Now Contact* and *Now Up-To-Date*. The System software is the US version of 7.5.3.

The documentation is very good and is a great improvement on past Power Computing clones. You get a hefty looking manual packed with technical information about the machine, tips, troubleshooting, a Mac OS basics guide, step-by-step walkthroughs on upgrading, and detailed instructions on how to use the bundled FWB software. The jargon used throughout is explained well and it's actually a good read. Excellent.

The results

The PowerBase came in third on the benchmarking tests. However, as its processor is considerably slower than the machines that took first and second places, it did well. It scored 309% in the CPU test compared with a 6100/60, and 320% on floating-point (mathematical) calculations. It was less hot on the real-world tests, hobbling through a *Photoshop* 4-pixel Gaussian blur in 55 seconds and the colour halftone filter in 1 minute 47 seconds – quite a bit slower than the other Macs on test. Still, it performed well considering its low price, and gave the 604e-chip-based Computer Warehouse Macs a good run for their money.

Overall, the PowerBase represents very good value for money. It may not be powerful enough for a top professional system, and first-time buyers might find the software bundle weak compared to other systems such as Apple's Performa range and Umax's Apus range, but if you are buying a Mac second time around, this should serve you well.

PowerBase 240

Lacking expansion potential and bundled software, but cheap and very powerful.

Features	82%
Ease of use	84%
Documentation	90%
Value for money	94%
MF rating	**87%**

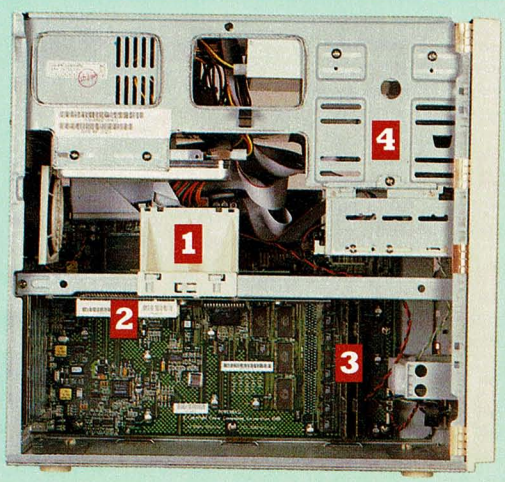
UK vs US

The US version of the System software has some subtle differences such as the Trashcan icon instead of the Wastebasket. More serious is the fact that it defaults to the $ sign, which can be problematical with some software. If you have a US System installed, *don't* use UK localised updaters.

Upgrade!

Want more power but can't afford a new Mac? Next issue we look at the upgrade options that will squeeze more power out of your existing Mac, from the humble IIci to the mighty PCI PowerMac. What is available, how much does it cost, and is it worth it? Don't miss next issue!

Inside the PowerBase



1 Processor daughterboard. Hidden behind the fan is the 240MHz 603e processor on a card.

2 PCI slots. Three slots mounted on a riser card.

3 Three DIMM slots. Use these to expand RAM to a maximum of 160Mb using EDO-RAM.

4 Empty drive bays. Two 5.25-inch bays for devices like a second CD-ROM drive and one 3.5-inch for a second internal hard drive.

PRICE	ON SALE	CONTACT	WEB SITE	WARRANTY
£1,762	Now	MCM Distribution on 0171 723 7221	http://www.mcm.co.uk	one year

Computer Warehouse New York

Computer Warehouse now makes its own Macs, going for the high-power, low-price market. But is power alone enough?

When Motorola signed up to the Mac OS licence from Apple, part of the deal was that Motorola would be able to sub-license to other companies. Most of these have been in the Far East, but Mac reseller Computer Warehouse has jumped onto the Mac clone bandwagon with a range of cut-price clones.

The range consists of three machines: the New York, the Manhattan, and the Hollywood (not reviewed). All three are based on a 200MHz PowerPC 604e processor, using the Apple and Motorola Tanzania logic board design. This motherboard is designed to use cheaper, more readily available components than the board found in PowerMacs such as the 9600. It also supports either a PC-compatible keyboard and mouse or the traditional Mac ADB devices, like the PowerBase. These plug into two separate ports on the back of the Mac. However, the processor isn't mounted on a daughterboard. Instead it is soldered directly onto the motherboard, which means the processor can't be upgraded as it can be in PowerMacs.

New York is the base model of the three, and the only one to be housed in a desktop case. Externally, it looks much like a PC compatible. Apple is renowned for its design genius but Computer Warehouse has gone for a design similar to Motorola's StarMax Mac clones. For design snobs – and we have been rather spoiled by Apple – the case won't evoke passion and feeling. In its favour, though, is its steel casing, which has a solid feel to it – essential if you're going to park it on the floor and kick it every day.

You'll need a screwdriver to get inside the New York. Three screws on the back hold the steel lid in place, and, these removed, the lid slides off to reveal the motherboard. The board itself is an Apple one, and is the same type as you'll find in the PowerMac 4400. What immediately hits you is the fact that the RAM slots are buried under a nest of wires, and to fit RAM you need to disconnect these so you can get to the slots, which is clumsy. There are three slots, which together will accept up to 192Mb of EDO-RAM (a type of low-voltage memory used by Macs with the Tanzania motherboard such as the PowerMac 4400 and the Motorola StarMax range), and it comes with one 16Mb DIMM fitted.

To the left of the machine is the PCI riser board, which provides three PCI slots for expansion. In front of this is the Level 2 cache card slot, which comes filled with 256Kb. Finally, there is an empty 5.25-inch drive bay on the right, and this will accept any 5.25-inch device such as a CD-ROM drive.

The ports of New York

On the back of the machine are the usual ports – ADB, printer, modem, SCSI, microphone and headphone – although it would have been better if the last two had been on the front. There's no Ethernet port, though, and the monitor port is an SVGA one, not the native Mac type, although you can connect an Apple monitor via an adaptor (not included).

Documentation for the New York is thin on the ground. You get a flimsy manual which tells you little other than how to set the machine up. There is a brief section on the Mac OS, which consists of an explanation on the differences between application and document icons on the Desktop, and that's about it – no technical specs, no troubleshooting, not even a section on adding more RAM or a PCI card.

There is no bundled software with this or the other Computer Warehouse Mac reviewed here other than a US version of System 7.5.3. This machine is aimed at those who want raw power without the frills, which accounts in part for its low price. As for power, the machine's pedigree may sound impressive, but in our tests it trailed a long way behind the Umax 200MHz Pulsar, which uses the same processor and has the same clock speed, mainly because of the different board design. However, compared to the other machines on test here, the New York did exceptionally well. It performed a 4-pixel Gaussian blur on a 30Mb *Photoshop* file in a very respectable 32 seconds, and zipped through the colour halftone filter in 1 minute 14 seconds.

So, although the New York is not the most technically impressive machine, you do get a lot of power for your money. If you want upgradability and loads of oomph, look elsewhere. If you're on a tight budget and aren't fussy about bundled software, this is a bargain.

Look out for...

Apple is about to release a new range of PowerMacs based on the old Performa design: the all-in-one 5400/180, the 5500/225 – the latest black all-in-one Mac – and the 6500/250. For more details, see "What's New" on page 20.

Computer Warehouse New York

No frills and it's not upgradable, but it does provide a lot of cheap power.

Features	72%
Ease of use	80%
Documentation	65%
Value for money	90%
MF rating	**79%**

Inside the New York

1 200MHz 604e processor. This is soldered to the motherboard and therefore not upgradable.

2 PCI slots. Three slots for fitting expansion cards such as a graphics card.

3 Three DIMM slots. These are for memory expansion up to 192Mb using EDO-RAM.

4 A 16x speed internal CD-ROM drive. Currently the fastest to be bundled with any Mac!

PRICE	ON SALE	CONTACT	WEB SITE	WARRANTY
£1,997	Now	MCM Distribution on 0171 723 7221	http://www.mcm.co.uk	one year

Computer Warehouse Manhattan

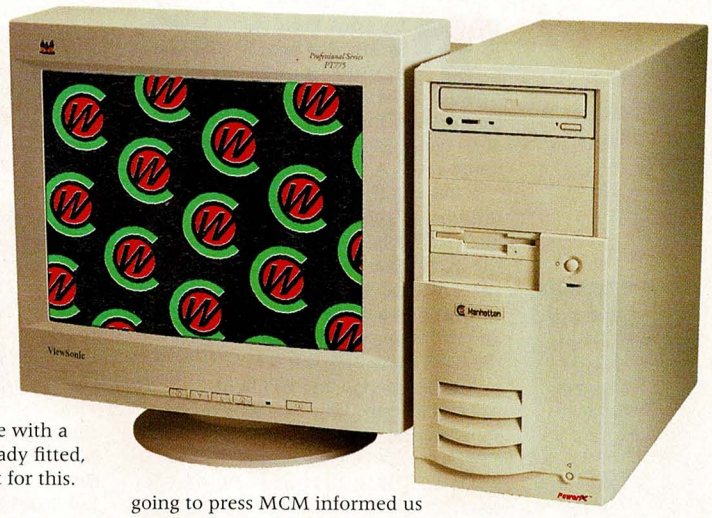
We take a look at the second Mac in the Computer Warehouse range, to see what it offers over the New York model...

Why name Mac clones after American cities, especially when they're made in the UK? The Manhattan is New York's bigger brother and it comes in a mini-tower casing. It has a slightly more distinctive design than its desktop counterpart, but it's still not what you'd call *attractive*.

The steel casing is a point in its favour, but this is something of a challenge to remove. Four crosshead screws on the back of the case clamp it firmly in place. Once these are removed you have to slide it backwards, up and off. The case flexes while you do this, and you find yourself snagging the steel skeleton of the Mac. That said, no one will be able to pinch your RAM in a hurry.

On the back of the case you'll find the same ports as on the New York, though still no Ethernet or Mac monitor port; you're restricted to using the SVGA port. If you have a monitor with a VGA connector this is no problem, but if it's an Apple monitor you'll need to buy an adaptor (around £15 from most Mac resellers). It seems a tad ridiculous to have to buy an adaptor to connect a Mac monitor to a Mac clone. This aside, it does have a generous 2Mb of on-board VRAM (Video RAM), which is enough to support millions of colours at 1,024 x 768 pixel resolution – impressive.

Inside, things look much the same as the New York. The Manhattan is based on a 200MHz PowerPC 604e processor, which is soldered to the motherboard – in fact, it's an identical motherboard. What gives the game away is the PCI riser card, which has an extra two slots on it, bringing the total to five. The Manhattan also has a larger hard disk, a whopping 3.8Gb, which makes the New York's 1.2Gb look puny. The tower case also gives the Manhattan extra internal breathing space, and it has two empty 5.25-inch bays and an empty 3.5-inch one ready for fitting more drive units. The RAM in this machine, at least, is slightly easier to get at, although you'll still be hindered by ribbon cables. Again, there are only three DIMM slots, limiting your expansion possibilities to 192Mb. However, it does come with a monstrous 64Mb of RAM already fitted, which compensates somewhat for this.



Identical twins?

The accompanying manual is – no, surely not! Yes! – it's the same as the one for the New York. It reads well enough, but it lacks detail, skipping over not-so-minor technical details like how to fit more RAM, a PCI card, or an extra drive. Also, there's no troubleshooting section or information on the machine's specs. This is a pity because it doesn't cost much to produce a decent manual, and it makes the setting up, maintenance and upgrading of a machine so much easier.

As mentioned earlier, there is no bundled software other than the US version of System 7.5.3. It's surprising that the Manhattan, and the New York for that matter, didn't come with version 7.5.5 as this has been localised for the UK for months. However, at the time of going to press MCM informed us that if you buy this Mac or the New York you should be able to get a 7.6 upgrade from them at a later date (please check this first with them before you buy).

In the benchmarks the Manhattan beat the other clones on test in terms of speed, but it wasn't significantly faster than the New York. It does have a slight advantage because of its larger and faster hard drive, but the difference in speed is so small it is hardly worth mentioning – less than half a percent. Oddly, it didn't do quite so well on the real-world tests. It dragged through a 4-pixel Gaussian blur on a 30Mb *Photoshop* file in 39.5 seconds compared with 32 seconds for the New York, but it was 4 seconds quicker on the colour halftone filter, coming in at 1 minute 10 seconds.

So the Manhattan isn't a design classic, it doesn't have any bundled software, the manual is too thin, and you can't upgrade the processor, but – and it's a big but – this is a cheap machine for what you get. The Manhattan is even better value for money than the New York – you only pay £235 more to get an extra 48Mb of RAM, two more PCI slots, a hard drive three times the size, and extra drive bays.

At less than two grand, the Manhattan beats all the other Macs at this price in terms of performance. If you want the best power-to-your-pound ratio, this is the clone that offers it.

Hollywood

Hollywood, the third Mac in this range, is the same spec as Manhattan, but comes with a slightly larger hard drive (4Gb instead of 3.8Gb), a miro-Motion DC-20 video digitising card and the highly acclaimed *mTropolis* multi-media authoring software. It costs £2,349.

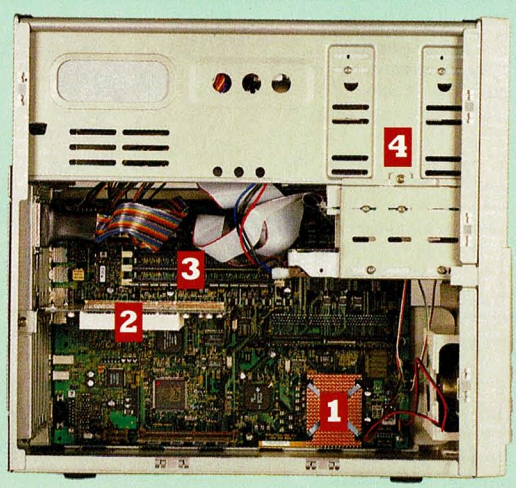
Inside the Manhattan

1 200MHz 604e processor. Soldered to the motherboard and therefore not upgradable.

2 PCI slots. Five slots that will accept, for example, video, graphics and SCSI cards to expand your Mac further.

3 Three DIMM slots for expanding memory up to 192Mb using EDO-RAM.

4 Empty drive bays. Two 5.25-inch, and one 3.5-inch for fitting a removable device such as a Zip drive.



Computer Warehouse Manhattan

Still no frills, bundled software or the ability to upgrade, but the extra storage and memory only cost you a few quid extra.

Features	75%
Ease of use	80%
Documentation	65%
Value for money	91%

MF rating 81%

PRICE	ON SALE	CONTACT	WEB SITE	WARRANTY
£3,289	Now	IMC Distribution on 01344 871344	http://www.umax.com/	one year

Umax Apus Multimedia Studio

From the stripped down Macs we move to the opposite end of the spectrum – a Mac that comes with just about everything...

The Apus Multimedia Studio is aimed at people who want to author multimedia straight out of the box. It's based on a Umax Apus 3000/200, a 200MHz 603e-based Mac housed in a mini-tower case.

It features three PCI slots, two DIMM slots for expanding your RAM, a 2.1Gb internal IDE hard drive, an 8x speed CD-ROM drive, and 256Kb Level 2 cache. Its processor is mounted on a daughterboard, and this is upgradable. Like the PowerBase 240, this is a proprietary design and will fit in Apus Macs only. Upgrades for existing Apus machines are out now and cost £352 for a 200MHz 603e and £619 for a 240MHz 603e, with faster chips to follow soon. The 8x speed CD-ROM drive is disappointing in that most new Macs now ship with 12x speed or faster.

The bundled hardware includes a ViewSonic 15GA 15-inch monitor (see our review on page 74), an internal Philips CDD 2600 2x speed write, 6x speed read recordable CD drive, a Umax Vista S6e scanner (see MACFORMAT 41), a 4Mb MGA Millennium 3D graphics card (see MACFORMAT 45) expandable to 8Mb, a 33.6Kbps fax modem, an extended keyboard and a mouse.

The 16Mb of on-board RAM has been boosted to 48Mb. The Apus will take either EDO-RAM or the fast-paged RAM found in PCI PowerMacs such as the 7600. This means you can use existing RAM rather than having to buy EDO-RAM. There are only two DIMM slots, which is limiting, but you can add 128Mb DIMMs to take the maximum RAM up to 272Mb.

The casing is easier to take off than the other clones: you only have to remove one thumbwheel screw by hand, and then flip two catches at the back of the Mac. Inside it's quite roomy and the slots are easily accessible. One of the three PCI slots is taken up by the graphics card, which obscures the processor daughterboard slightly, so you need to remove any PCI cards before you can take out the processor. Elsewhere inside are three spare drive bays, one 5.25-inch to the front, and two 3.5-inch bays at the back. The knot of cables that protrudes from the power supply makes fitting the extra 5.25-inch drive rather difficult as the cables are positioned behind the bay.

Like all other Umax clones, the Studio comes with Macromedia's *FreeHand Graphics Studio* bundle, which includes *FreeHand 5.5*, *xRes 2.0*, *Fontographer* and *Extreme 3D*. You also get the *Director Multimedia Studio* bundle, which includes *Director 5.0*, *SoundEdit 16* and *Deck II*.

There's also a copy of *Toast CD-ROM 3.0.5* for cutting CDs, *FWB CD-ROM ToolKit* and *Hard Disk ToolKit*, *ClarisWorks 4.0*, and *TechTool Pro* – an enhanced version of the shareware utility. For the fax modem there's *FaxSTF* and *Front Office* (a voice-mail program), and a NetMatters CD with a free 30-day connection period to its Internet service. With the scanner you get *Photoshop 4.0LE*, *PageManager*, and *Omnipage* OCR software.

There are printed manuals for everything except *FreeHand Graphics Studio* (the manual is in electronic Acrobat PDF form on the CD). The documentation for the Mac covers set-up, OS basics, upgrading and expansion, and troubleshooting. It's well written, and explains jargon used.

In benchmark speed tests the Studio came last at a mere 269% compared with a PowerMac 6100/60, while the other machines all rated 309% or better. This is mainly because it has the slowest processor of the bunch. It did better in the real-world tests, handling a 4-pixel Gaussian blur in *Photoshop* in 44 seconds, and the colour halftone filter in 1 minute 35 seconds. Still not very fast, though, and it would have been better if it were based on a 240MHz 603e processor than a 200MHz one.

The Umax Apus Multimedia Studio is in a class of its own, and its strength lies in its bundled hardware and software. To buy all this kit separately, you'd have to spend at least £5,000. If you want raw speed, this Mac isn't for you, but if you want an out-of-the-box solution, you'll have to go a long way to better this deal.

Multimedia Studio

Far from being the fastest Mac available, but it wins our vote for best bundle.

Features	86%
Ease of use	85%
Documentation	88%
Value for money	95%
MF rating	**90%**

Making movies

If you like the look of the Multimedia Studio but can't afford it and want video, take a look at the Apus Movie Maker bundle. It's based on an Apus 3000/200 and comes with a miro-Motion DC-20 video card, a Umax S6e scanner, and a 15-inch ViewSonic monitor. It costs £2,774.

Card change

IMC is currently trying to replace the Millennium graphics card with an ATI Xclaim VR because it can't get enough Millennium cards. The VR card comes with video in and out, so you could add video editing to the Mac's list of possible uses.

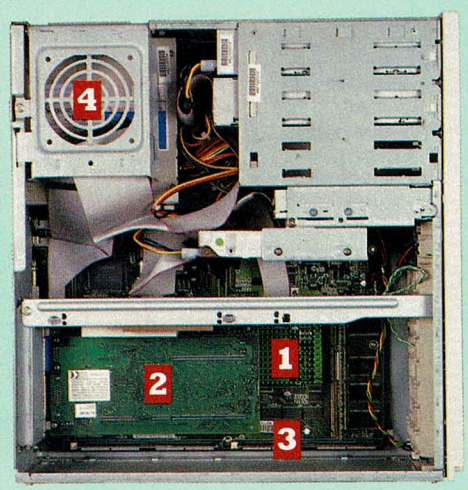
Inside the Studio

1 200MHz 603e processor on a daughterboard. Faster chips are already available through IMC.

2 Three PCI slots. One comes ready-filled with a Matrox Millennium 4Mb 3D graphics card.

3 Two DIMM slots. These will take EDO or fast-paged DIMMs for a total of 272Mb of RAM.

4 Two empty 3.5-inch drive bays for fitting hard disks. An empty 5.25-inch bay sits near the front of the Mac.



The jargon

Clock speed – the speed at which the processor runs in megahertz (MHz). The higher the figure, the faster the processor runs and the faster instructions are carried out.
CPU (Central Processing Unit) – your Mac's main processing chip.
DIMM (Dual In-line Memory Module) – a memory expansion card used in PCI-based PowerMacs.
IDE (Integrated Drive Electronics) – a type of hard drive common in PC compatibles and used in many cheaper Macs and clones.
PCI (Peripheral Component Interconnect) – the expansion slots used inside newer PowerMacs. They enable you to expand and add more features to your Mac via cards that plug into the slots.
RAM (Random Access Memory) – used to hold software the Mac is running and documents you're working on. The more memory you have, the larger the documents you can open and the more powerful the software you can run.
SCSI (Small Computer Systems Interface) – the Mac's native peripheral connection protocol, used to connect to drives and scanners.
SVGA (Super Video Graphics Array) – a type of monitor port common on PC compatibles.
VRAM (Video RAM) – stores images before they are sent to the monitor. The more VRAM, the larger the monitor supported.

Verdict

The things to look for in a Mac are power, upgradability, software, and price, and this is what we've based our reviews on. The range we've covered typifies the different kinds of deals you can get, from the basic unit to one that has everything you need to start getting creative.

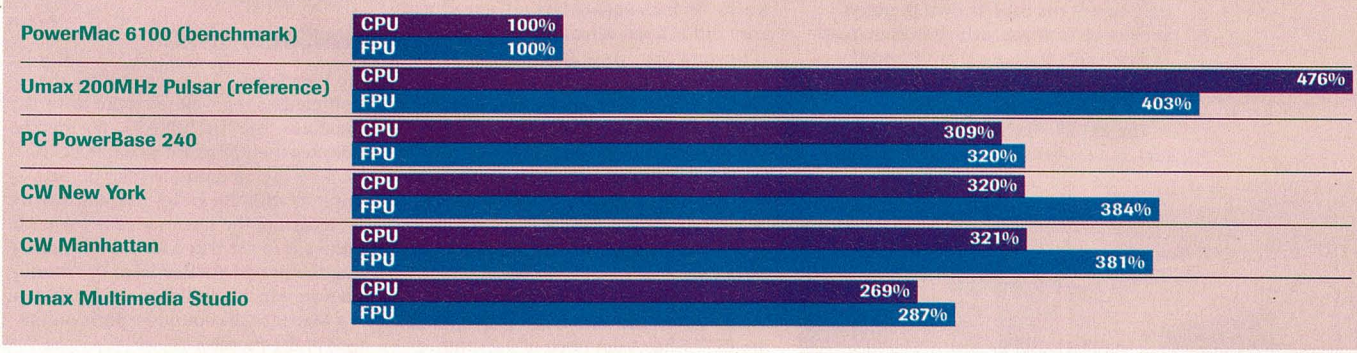
The Computer Warehouse Macs are impressive, but the extra speed afforded by the 604e processor doesn't outweigh the fact that these machines are not upgradable. These are ideal for corporate or creative use on a limited budget, but for home use you need more than the basic CPU. The PowerBase strikes a better balance. It's fast, upgradable, and comes with some basic home software such as *ClarisWorks*. The bundled software isn't so heavy, though, as to preclude using this Mac for business, and it gets our vote for being an all-rounder. Finally, the Apus Multimedia Studio takes the idea of a bundle to its extreme. It represents great value for money – as long as you make use of all its features. **MF**

Features at a glance

Feature	PowerBase	New York	Manhattan	Apus MMS
Price	£1,527	£1,762	£1,997	£3,289
Configuration	Mini-tower	Desktop	Mini-tower	Mini-tower
Processor	603e	604e	604e	603e
Speed	240MHz	200MHz	200MHz	200MHz
RAM	16Mb	16Mb	64Mb	48Mb
RAM Max	160Mb	192Mb	192Mb	272Mb
Hard disk	1.2Gb	1.2Gb	3.8Gb	2.1Gb
CD drive	8x	16x	16x	8x
VRAM	2Mb	2Mb	2Mb	4Mb
L2 cache	256Kb	256Kb	256Kb	256Kb
PCI slots	3	3	5	3
3.5-inch bays	1	2	1	2
5.25-inch bays	2	1	2	1
Processor daughterboard	Y	N	N	Y
PC mouse/keyboard	Y	Y	Y	N
Mac monitor port	Y	N	N	Y
SVGA monitor port	Y	Y	Y	Y
Ethernet	N	N	N	N
Warranty	1 year	1 year	1 year	1 year
System	7.5.3 US	7.5.3 US	7.5.3 US	7.5.5 US

Test results

Using *MacBench 4.0,* we tested each of the machines to assess their raw processing and number crunching power. The results are expressed as a percentage of how fast they performed in comparison with *MacBench's* benchmark system, a PowerMac 6100/60.



Real-world tests

To find out how each clone performed in real life, we subjected them to some real tests. We fitted each Mac with 48Mb of RAM and allocated 40Mb of it to *Photoshop.* We then ran a range of commonly used filters over a 30Mb graphics file and timed them. The timings given are taken from running the filter until the screen starts to redraw. This tests not only CPU and FPU performance, but also how fast the Mac can page scratch data from RAM to the hard disk and back again. This gives the best overall indication of the machine's performance.

Mac	Gaussian blur	Unsharp mask	Sharpen more	Colour halftone	RGB to CMYK
Umax Pulsar 200	42 seconds	38 seconds	26 seconds	1 minute 32 seconds	34 seconds
PC PowerBase 240	55 seconds	37 seconds	26 seconds	1 minute 47 seconds	44 seconds
CW New York	32 seconds	27 seconds	19.5 seconds	1 minute 14 seconds	25 seconds
CW Manhattan	39.5 seconds	28 seconds	17.5 seconds	1 minute 10 seconds	23 seconds
Umax MM Studio	44 seconds	28 seconds	19 seconds	1 minute 35 seconds	37 seconds

PRICE	£692 (PT775), £351 (15GA)	**ON SALE**	Now	**CONTACT**	IMC on 01344 872800	**WEB SITE**	http://www.viewsonic.com/
MAC	**Processor:** any	**POWERMAC**	**Processor:** any	**REQUIRES**	Mac adaptor (£14) • Sound cable (optional, £5)		

ViewSonic PT775 and 15GA

Fed up with the size of your screen? Want clearer, brighter images? Then perhaps you should consider a change of monitor. Derek Smith looks into the merits of two of the latest models...

The PT775 is a professional model at a competitive price.

You may not be familiar with ViewSonic or its monitors, but this company is no newcomer. It's been making monitors in the US since 1990, but has only started to target the UK more recently. ViewSonic offers a whole host of monitors, divided into three main categories: entry level, multimedia, and professional. Under the spotlight in this review are the multimedia 15-inch monitor (15GA), and the professional 17-inch model (PT775).

The PT775 17-inch monitor is nothing special to look at, with the regulation vanilla-colour casing broken only by ViewSonic's fetching bullfinch logo. If you take a closer inspection of the screen itself, you'll see that it's pleasingly flat for a Trinitron screen. The reason for this is that ViewSonic uses its own branded version of Trinitron, which is known as "SonicTron". It claims that this produces at least as good a picture, but is flatter and cheaper to manufacture.

The PT775, like most modern monitors, is a multiscan monitor. This means you can select between a variety of resolutions, using the **Monitors and Sound** Control Panel. Clicking a different resolution instantly changes your monitor (whereas PCs need to restart to show the change, ha ha).

Resolutions start at 640 x 480 pixels, which is the resolution of a 14-inch monitor. This is too large to be desirable for day-to-day use (you'd go bug-eyed after a while with everything so large on-screen), but it is very useful on a 17-inch monitor if you want to give presentations to groups. Next up is the 832 x 624 resolution, which is the normal resolution for a 17-inch monitor – in other words, an inch-square box on-screen will print out at approximately one inch.

Beyond that, you can display at 1,024 x 768, or even 1,280 x 1,024. Although this may make everything on-screen too small for everyday tasks, it is useful for the occasional piece of DTP work. Indeed, the PT775 is theoretically capable of displaying at 1,600 x 1,200. However, most Macs cannot handle that resolution unless you fit a third-party video card at extra cost.

The dot pitch is the measurement of the finest dot the screen can display, and the PT775 has a dot pitch of 0.25mm. This is as good as any monitor you can buy, equalling the well-regarded Sony 200SF, and helps to produce a very sharp picture. Gradients are smooth, and the line between two contrasting colours lacks any hint of fuzziness or blurring.

You can access all the screen adjustments, such as Contrast and Brightness, by using on-screen menus. These are controlled by four buttons positioned just below the screen, and you can alter a bewildering array of settings, which is sure to satisfy even the most perverse user in the most difficult environments. And don't worry – if you mess things up, you can always instantly return the monitor to the factory presets.

Sony is the leader in quality monitors, and its new 17-inch 200SF screen is widely regarded as the one to compare all others against. The PT775 stands up well, with its slightly flatter screen and an equally crystal-clear display. At a list price of £692, this is cheaper than many other professional-level monitors, and you can expect to pay much less if you buy through mail-order.

Load of parabolics

The PT775 boasts the exclusive Double Dynamic Focus System, with a parabolic focus compensation circuit to increase image quality. That's nice then.

The 15GA has impressive sound quality.

ViewSonic 15GA

The ViewSonic 15GA comes from the multimedia range, aimed more towards home use. The "multimedia" tag merely indicates that there are a couple of speakers bolted onto the sides of the monitor, with the grilles running down the length of the screen on both sides. If you want to get wired for sound, simply plug the provided cable from the sound-out port which you'll find on the back of any Mac into the sound-in ports on the back of the monitor.

The sound quality is particularly good for small speakers, even when you turn them up to the loudest settings. This makes them ideal if you want to play games and multimedia CD-ROMs in their full glory. Don't get carried away though: MeatLoaf will still sound distinctly vegetarian on this, so it's certainly no replacement for a stereo.

While you can buy superior stand-alone multimedia speakers for around £60 (see MACFORMAT 40), you have to take into account the convenience of having integral speakers. For instance, there's no need for another power

adaptor, it frees up desk space, and there are far fewer cables dangling around.

You'll also find a small input-speaker in the centre of the monitor, below the screen, which is used for recording. A cable runs from the back of the monitor into the sound-in port at the back of your Mac, enabling you to use voice-recognition or video-conferencing software. Unfortunately, modern PowerMacs have a non-standard sound-input port, which requires you to buy a special cable from a hardware store (costing around £5). Mind you, with so few uses, you'll probably never get around to it anyway.

The screen quality is notably inferior to the professional range, as this monitor uses the cheaper "Shadow Mask" technology. However, in its class, it does compare well with the excellent Apple 1705, making it fine for home and small business use. If you're a DTP professional, though, you'll probably still want a Trinitron (or SonicTron!) monitor.

Despite a two-inch smaller screen, the 15GA can almost match the resolution of the PT775, with a maximum resolution of 1,152 x 870. This is greater than most 15-inch monitors, and even some 17-inch monitors. However, because of the inferior technology, text does get distinctly difficult to read at higher resolutions. The £351 price tag matches that of other Shadow Mask monitors *without* the built-in speakers, making it sound value for money (groan). **MF**

Adaptor

These monitors, along with all non-Apple monitors, need an adaptor to work on a Mac. Our review PT775 came supplied with an adaptor, but the 15GA didn't – so make sure you specify one when you order. You can expect to pay £14.

ViewSonic PT775

A professional-standard, competitively priced multisync monitor, with excellent display quality and easy-to-access controls.

MF rating 80%

ViewSonic 15GA

An impressive multimedia monitor, with good sound quality. Display not as fine as a Trinitron, but excellent value for money.

MF rating 83%

Behind your screen

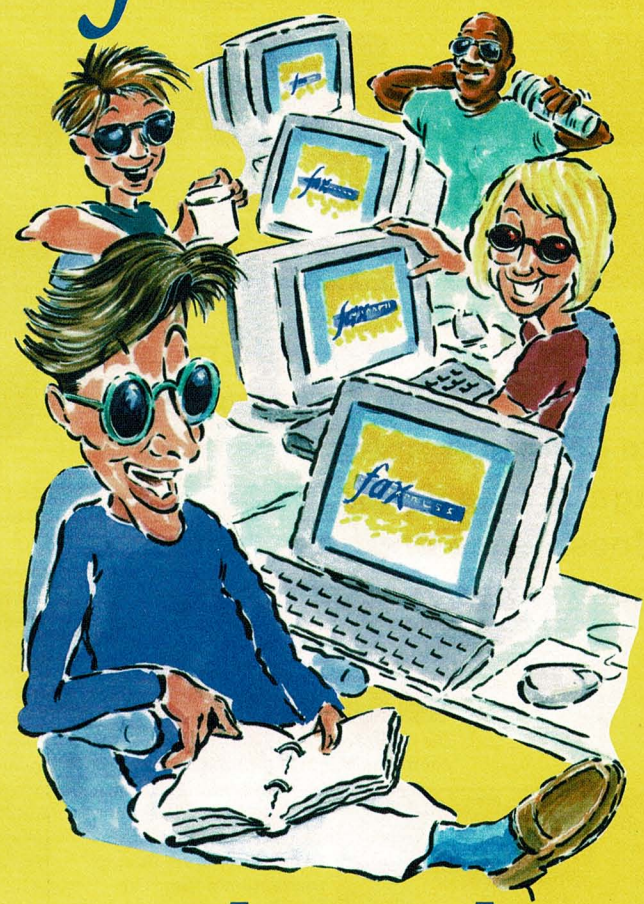
The vast majority of monitors fit into one of two categories: Trinitron or Shadow Mask. Strictly speaking, Trinitron is a trademarked technology of Sony, although other manufacturers have developed similar tubes. For instance, ViewSonic has SonicTron. In practice, though, they are very similar and are usually all referred to as Trinitron.

The distinction lies just behind the screen's surface. Both types of monitor work on the age-old principle of firing three coloured beams of electrons at a phosphor-coated surface. The three beams intersect at specific points, producing a colour on the other side of the screen, out here in the real world.

The trick of getting a sharp picture is to ensure that these beams intersect at exactly the right place. Shadow Mask uses a solid plate, perforated with thousands of tiny holes, through which the beams must pass. A Trinitron screen, on the other hand, uses thousands of individual tiny wires running in a vertical direction.

The fineness of the Trinitron wires produces a sharper picture, the only drawback being one or two larger horizontal wires to keep the vertical wires in place. These horizontal wires are visible, although they usually go unnoticed.

fax EXPRESS™



cool, calm, collective!

Any office environment can be frenetic enough without having everyone's concentration broken by the demands of fax traffic.

In recent years, all over the world, FaxExpress has been solving this problem by working away in the background while the user prioritises on weightier matters.

FaxExpress is Mac dedicated software with a proven reputation for reliability. And now, with the addition of a new interface it's even quicker, just as easy to use and simple to install.

It provides multiple phone books, delayed send, status screen and with 256 gray levels, squeaky-clean graphics. Available in both single and multi-user versions, FaxExpress operates with all Mac applications.

For more information call your dealer or Glenwarne Limited on 01628 667702 Fax: 01628 667703

FaxExpress...Get on with it!

FaxExpress is a registered trademark of Glenwarne Limited.
Macintosh is a registered trademark of Apple Computer Inc.

PRICE	Around £400	**ON SALE**	Now	**CONTACT**	Kodak on 0800 281 487	**WEB SITE**	http://www.kodak.com/

MAC **Processor:** 68020 • **RAM:** 6Mb **POWERMAC** **Processor:** any • **RAM:** 6Mb **REQUIRES** **System:** 7.1 or higher • **HD space:** 30Mb • **Screen:** 14-inch colour monitor • **Colours:** 256 (millions recommended) • **Extras:** CD-ROM drive • Picture card for storing more images (optional), around £90

Kodak DC25

This new camera could mean that you'll never have to queue to get your photos developed again. The Kodak DC25 doesn't use film – but is it as good as the real thing?

The DC25 digital camera measures a compact 40 x 130 x 71mm.

Kodak has for a long time been associated with film and cameras, but in the last five years it has taken to the digital age like a duck to water. The company is pouring millions of pounds of development money into digital cameras – cameras that store images in memory rather than on conventional film. The benefits are obvious: no film and so no processing time. The disadvantages are that digital cameras are expensive and have produced relatively low quality images – that is, until recently.

PhotoEnhancer **transfers images from the camera's memory to your Mac and enables you to perform basic editing tasks including rotation and cropping.**

The DC25 is one of Kodak's entry-level digital cameras. It's aimed at home users who want to get their pictures into their Macs with as little hassle as possible, and also want a camera that's easy to use. It looks very much like an ordinary camera. The only give-away to its true identity is an LCD panel on the back, which you can use to review the pictures you've taken. To use the camera, you simply turn it on, point, and hit the button. It has a built-in automatic flash, which is effective up to 13 feet, and automatic exposure for real point-and-click ease of use. It also features a ten-second timer for self-portraits, auto power off to conserve battery life, and a standard tripod-mount fixing.

Technically, the DC25 is extremely impressive. It can store up to 30 images at standard resolution (320 x 240), and 15 images at high resolution (493 x 373). Both these resolutions produce 24-bit (millions of colours) pictures, but the low-res pictures are heavily compressed and the depth of detail isn't as great. The camera produces images at the same resolution as its cheaper brother, the DC20 (MACFORMAT 41). However, the quality is far superior, and the pictures much sharper and colour more vibrant. The DC25 gets much closer to conventional snap quality than the DC20.

Once you've filled the camera's memory with images, you have the option of downloading them to your computer (via a supplied serial link that plugs into the modem or printer port on the back of your Mac), or adding more memory via a Picture Card (not supplied, around £90), which slots into the side of the camera. This enables you to take another 13 high-res or 24 low-res pictures.

The camera runs off two three-volt lithium batteries (supplied), and will also run from a seven-volt mains adaptor when it's connected up to your Mac. You can view your pictures using the built-in LCD screen on the back of the camera, and this also tells you how many more pictures you can take and the battery status. Using the LCD display, you can erase images or move them to the Picture Card, if you have one installed. The screen's brightness is also adjustable.

The camera comes complete with a full-colour manual, two PhotoLife batteries, connection cables for Mac and PC-compatible computers, and image-editing software. This comprises *PhotoEnhancer Special Fun* for basic colour, contrast and brightness correction, and a cut-down version of *Kai's Power Goo*. The bundled version of *Goo* lacks the "Fusion Room" feature, but has the ability to transfer images directly from the camera to the program. Once there, you can have endless fun distorting friends' faces.

PhotoEnhancer lacks *Goo's* severe distortion tools, but it offers colour correction features and can save pictures in a variety of formats including PICT, TIFF, JPEG and EPSF. When you register the camera and software, you'll receive a carry case and *Picture Postcard*, used for sending greetings cards over the Internet.

So, how does the DC25 measure up? Well, it's nowhere near as good as even a cheap conventional compact camera. However, bearing in mind the price, it produces some impressive images. The low-res pictures lack detail and are a bit fuzzy, but the high-res ones fare better and are surprisingly sharp. The colour reproduction in both is quite good, but the flash over-exposes skin tones.

Digital cameras are really still in their infancy, but if you're fed up with paying for film and waiting for your holiday snaps to come back, this could be just the thing for you. **LINDSAY BRUCE**

The LCD screen on the back of the DC25 enables you to view your pictures, and tells you how many are left.

In high-res mode, the camera produces colour-accurate images that impress.

Kodak DC25

Not cheap, but it's digital and just think of the fun you can have with *Goo*. Excellent.

Features	**79%**
Documentation	**81%**
Ease of use	**82%**
Value for money	**75%**

MF rating 80%

PRICE	£1,056	ON SALE	Now	CONTACT	Disc Direct on 01223 507700	WEB SITE	Not available	REQUIRES	Any Mac

ONE 2.6Gb Optical Drive

The ONE 2.6Gb MO drive is wrapped in a steel casing you could bounce rocks off. But it also takes up a large part of your desk space...

ONE Technologies' latest magneto-optical drive is impressive, being able to store a huge 2.6Gb of data on one 5.25-inch cartridge, but is it worth the money?

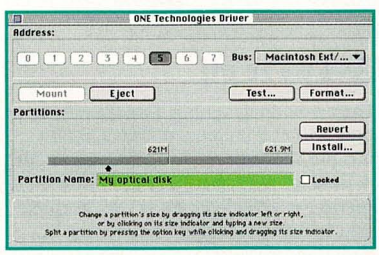
ONE Technologies is a storage manufacturer that's already well known and respected in Sweden, Denmark, Austria, Germany and France. Now, with its parent company Disc Direct, it aims to break into the UK with a series of affordable high performance drives. It's already enjoyed some success with a 1.3Gb optical drive (MACFORMAT 34), and now it has introduced the 2.6Gb version.

The drive itself is a weighty monster, housed in a heavy steel casing that gives it a reassuringly solid feel. Okay, it wins no awards for aesthetic appeal, being a standard computer-grey square box that's as visually inspiring as porridge, but the build quality is certainly impressive – it'll probably survive all but Armageddon. It's surprising then that the drive only comes with a standard one-year warranty.

The drive is large even for a 5.25-inch mechanism, measuring up at 68.5mm x 246.5mm x 254mm. This means that its footprint (the amount of desk space it takes up) is rather large, so you run the risk of losing it under the stacks of faxes and print-outs you'll inevitably pile on it.

On the outside, the drive has the usual features: two 50-pin SCSI connectors, power on/off switch, a SCSI ID switch on the back, and a drive access light on the front. On the inside you'll find a 2.6Gb magneto-optical drive mechanism made by MaxOptix, with a 1Mb cache to speed up reading and writing to the disk.

Things get more interesting once you start hooking it up to your Mac. The drive comes with the standard 25-pin-to-50-pin SCSI cable for connecting it to your Mac, a terminator for the end of the SCSI chain, and a ONE Technologies branded version of *FormatterOne Pro* driver software. On the downside, it's not supplied with a cartridge. 2.6Gb optical carts cost about £56 each, so not getting one bundled with the drive is a major omission that puts a serious dent in its value for money.


ONE Technologies Driver
Address:
0 1 2 3 4 5 6 7
Bus: Macintosh Ext/...
Mount
Eject
Test...
Format...
Partitions:
Revert
Install...
621M
621.9M
Partition Name: My optical disk
Locked
Change a partition's size by dragging its size indicator left or right, or by clicking on its size indicator and typing a new size.
Split a partition by pressing the option key while clicking and dragging its size indicator.

The drive comes with the very popular *Formatter One* driver software, for formatting and partitioning your optical cartridges with the minimum of fuss.

However, the driver software is very good. It consists of an Extension for your System Folder which formats cartridges and mounts them on the Desktop, and an application for installing custom drivers and partitions on the cartridge, should you wish to do so. It is easy to use and has on-line help for the novice.

The drive's manual also has a very good section on how to use the program and explains what each of the options are, as well as covering setting up the drive and basic troubleshooting.

Another bonus is that the drive will read and write to 600Mb, 650Mb, 1.2Gb, 1.3Gb, 2.3Gb, and 2.6Gb cartridges. So, if you have an older optical drive and are looking to replace it, this one will enable you to use all your existing carts.

The drive is reasonably fast in use, but certainly not greased lightning. We tested the drive on a 200MHz Umax Pulsar using *MacBench 4.0* (standard benchmark software) for the scientific approach, and a 50Mb folder full of assorted file sizes ranging from a few Kb to 10Mb for a real-world test. For comparison, we carried out the same tests on a standard 1Gb Fujitsu hard drive. The ONE drive came out at 54% the speed of the hard drive during the benchmarks, which is fairly average for an optical. In the real-world test, though, it didn't fare so well. It took 2 minutes 15 seconds to copy the 50Mb folder, while the Fujitsu hard drive took a mere 45 seconds.

At over £1,000, ONE Technologies' 2.6Gb MO drive is likely to appeal to professional users only. Overall, it's not the world's fastest, and you don't get a cartridge with it either. But despite this, it's relatively cheap for a mag-op drive of this capacity, it's built to last, and comes with good driver software, connection cables and an impressive manual. When all's said and done, it still represents good value for money. **LINDSAY BRUCE**

Driving force

We reviewed the hugely popular ONE Technologies 1.3Gb magneto-optical drive in MACFORMAT 34, where it received a MACFORMAT Classic rating of 95%.

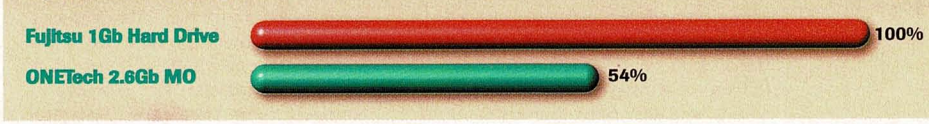
ONE 2.6Gb MO drive

A solid drive in terms of build and performance, at a very competitive price.

Features	**84%**
Documentation	**92%**
Ease of use	**90%**
Value for money	**86%**
MF rating	**87%**

How does it perform?

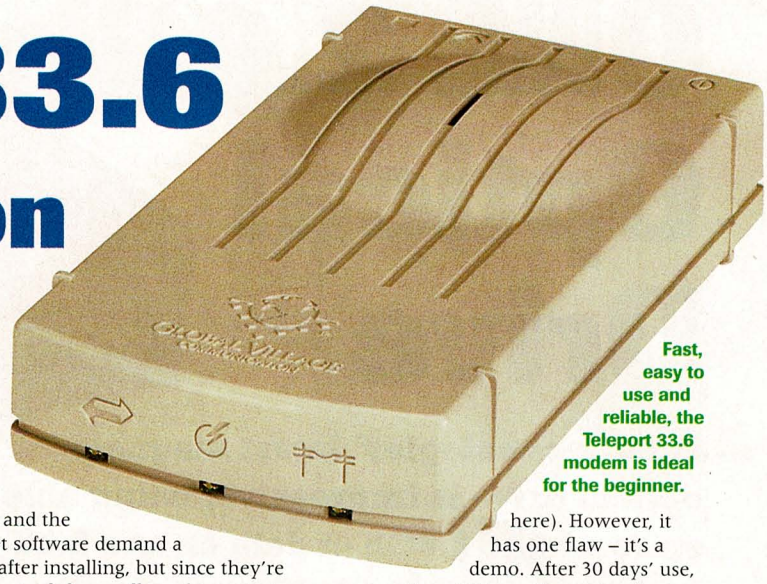
We tested the ONE optical drive with *MacBench 4.0* and compared the results to a standard 1Gb Fujitsu hard drive. As you can see, the MO drive comes out about half as fast – average for an optical.



PRICE	£163	**ON SALE**	Now	**CONTACT**	Frontline Distribution on 01256 868008	**WEB SITE**	http://www.globalvillage.com/
REQUIRES	GeoPort-equipped Mac (that is, Performa 630, Quadra 650, 660AV or 840AV, or any PowerMac) • Recommended for fax software: 68040, 8Mb RAM minimum						

Teleport 33.6 Internet Edition

Want to speed along the Infobahn? Get off the hard shoulder and live life in the fast lane with Global Village's Teleport 33.6 fax modem.

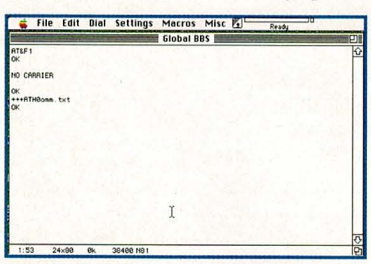


Fast, easy to use and reliable, the Teleport 33.6 modem is ideal for the beginner.

Global Village has long been known for producing Mac-friendly modems, the kind that you just plug in and forget about – no messing around with AT commands and flashing RT lights. The invisible grey box with cool software is exactly what we want. So how does the firm's latest offering, the Teleport 33.6 Internet Edition, stand up?

The modem itself is a stylish, inconspicuous grey box (135mm x 75mm x 25mm) with three lights: connection open, power and data transfer. A single cable connects it to the modem port on the back of your Mac. The cable provides both the data connection and the power to the modem – there is no external power supply. This is great if you have a Mac equipped with a GeoPort, but useless if you don't, so it immediately restricts the Teleport 33.6 to PowerMacs and certain 68K Macs (Performa 630, Quadra 650, 660AV and 840AV). On the bright side, however, it means you need one less trailing power cable and power socket – surely a good thing. Sadly, there's no on/off switch, so the modem is switched on for as long as your Mac is.

Setting up is straightforward. Two telephone cables are supplied, one for connecting the modem to the telephone wall socket, the other for connecting the phone to the modem. A telephone-thru socket means you can use both phone and modem on the same line (but not at the same time, of course). The modem can distinguish voice from data calls, so it will automatically pick up faxes while your Mac is unattended.



***ZTerm's* interface may be archaic and unfriendly, but behind the front-end lies a very powerful comms program that will serve you well.**

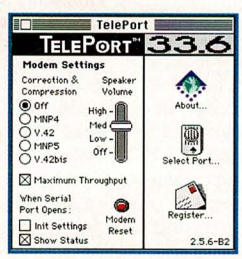
The software for the modem comes on a variety of disks: a floppy for the basic comms and fax software and drivers; a CD-ROM with *GlobalTransfer Lite*, a file transfer program; and two floppies for the BT Internet Connection Kit. So, there's everything you need – but couldn't all this come on one CD? Both the fax and the Internet software demand a restart after installing, but since they're on separate disks you'll need to restart your Mac *twice* before you can even get up and running!

What's AT?

AT commands, developed by American modem maker Hayes, are the standard set of electronic commands issued by the computer to the modem to control how data is sent and received. ("AT" stands for Attention; "ATDT" means "set to Tone Dialing", and so on.)

And we're off

Once you do get going, though, the Teleport 33.6 is a dream – it's fast (33,600 bits per second), reliable and easy to use. A small progress bar pops up in the menu bar whenever it's in use, keeping you informed of what's happening but enabling you to get on with other things while you're sending a fax or downloading files. You can use the menu to disconnect at any time, but you set the modem's default settings for speed, protocol and internal speaker volume via its Control Panel.



The Teleport Control Panel and MacPPP deal with connecting to the Internet. All you have to do is launch your browser.

The comms package, *ZTerm*, is capable enough, but its interface is jurassic. It uses type-in AT command lines – about as intuitive as yoghurt, and difficult to get to grips with. Once you've mastered it, though, it will serve you well; *ZTerm* isn't pretty but is comprehensive.

GlobalFax is a Chooser Extension that enables you to print pages down a phone line – you can select **GlobalFax** in the Chooser, or simply hold down **[option]** and click in the **File** menu of any application. The **Print** command will change to **Fax** and then it's just like printing. Once the document has imaged (been converted from digital form into a picture that a fax machine can read), a dialogue box pops up asking for the name of the recipient and their fax number. An address book is provided for storing frequently used numbers.

GlobalTransfer Lite is a simplified program for transferring files between remote computers. It's very easy to use, and only takes a couple of mouse clicks to set up file transfers (no choosing protocols, compression and baud-rates here). However, it has one flaw – it's a demo. After 30 days' use, you can't send files, only receive them, until you pay £29.95 for the full program. In addition, there's the BT Internet connection bundle, which gives you 30 days' free connection, after which you have to pay subscription charges. This kit comes with Microsoft *Internet Explorer*, but it's version 2.1 – version 4.0 is due out any day now. However, once on-line you can download the latest version. You also get Microsoft *Internet Mail and News* (version 1.0), *StuffIt Expander 4.0.1*, and MacPPP for dialling into your service provider. Getting on-line with this is simple: launch *Internet Explorer* and MacPPP will do the rest.

The modem comes with a comprehensive manual which explains the basics and has a decent-sized troubleshooting guide. The documentation that accompanies *GlobalTransfer Lite* and the BT Internet Kit is not quite as thorough, and it's in Adobe Acrobat format on the disk.

The last word? Experienced surfers will want a bit more on the software side. *ZTerm* is very dated and the *GlobalTransfer Lite* demo is a bit of an insult – the full version would have added immensely to the value of the package. Overall, though, the Teleport 33.6 is a brilliant modem, it's fair value even if you never use the software, and the bundle is excellent for the novice who wants to get on-line. **LINDSAY BRUCE**

Teleport 33.6 modem

A very fast and neat modem at a reasonable price, but the software bundle could be made more friendly and complete.

Features	**81%**
Ease of use	**85%**
Documentation	**80%**
Value for money	**82%**

MF rating 83%

FutureNet '97

Europe's busiest commercial site gets a dynamic new look.

FutureNet has a new look and loads of exciting new areas on the way.

With over 500,000 registered users enjoying the site on a regular basis, Future Publishing's own Web site marches on with a fresh new look and a new attitude for 1997. The FutureNet team has redesigned the whole site, with 15 exciting new themed areas available now or coming soon. The address to enter into your browser is now **http://www.futurenet.com/**

MacWeb will give you news, tips, a buyer's guide and much more.

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GameNet offers Mac reviews, along with PC and console features.

■ **GameNet** (**http://www.futurenet.com/gamenet/index.html**) – FutureNet's gaming area brings you the best in computer and role-play gaming. You'll find coverage of Mac releases alongside reviews and news for PC, PlayStation, N64 and more.

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■ **MusiciansNet** (**http://www.futurenet.com/musiciansnet/**) – host to Future's music mags, including *Future Music, Total Guitar, The Mix, Bassist* and *Hip Hop Connection.*

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We've been on the Web for years, and now Britain's best-selling Mac magazine is joining the AOL family of services too! We'll be bringing you news updates, reviews and buying advice, with plenty of surprises lined up for the coming months.

Already one of the US's top service providers, AOL (perhaps better known as America Online) is now in the UK, offering *exclusive* Internet pages alongside its access to the Web. Last issue, we gave you the chance to sample AOL for free with our special preview software CD-ROM (UK readers only). All you need is a Mac and a modem, or another Internet connection. (Look out for AOL's completed Mac software soon.)

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Keyword: MacFormat

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LightWave 3D v5

A 3D program with a record of TV and film creations gets its first outing on the Mac, but how well has it made the transition? Marc Woods investigates...

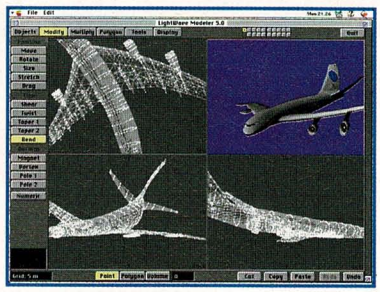
LightWave 3D has long been the dominant 3D package on the Amiga as well as professional workstations such as Silicon Graphics machines, and it has finally made it to the Mac. You may have seen examples of *LightWave's* abilities in television and film productions such as *Star Trek, Space: Above and Beyond, Golden Eye, Jurassic Park,* the M&Ms advert with silly haircuts, *The Simpsons* and many more. Most of these productions were generated on Video Toaster and Silicon Graphics systems, but you can now produce similar results on a Mac. Whatever machine you learn *LightWave* on, you can transfer that knowledge to any other platforms as it looks and operates the same in each environment.

***LightWave* is superb for creating and animating complex 3D objects, and its output quality is ideal for television and film.**

LightWave comes with a user guide and reference manuals, and a hardware dongle that plugs into your keyboard to prevent you from illegally copying the software. It's PowerMac-only, preferably 604-based, and uses QuickDraw 3D 1.5.1, which, sadly, does not come with it. The installation is horrifically complex (see boxout "How to install *LightWave*") and very un-Mac-like. One of the worst things is that you can't have spaces in the name of the drive you are installing onto, and once it's installed you mustn't move *LightWave* from the folder it was installed into! This sort of installation practice is more common on DOS-based PC compatibles, not Macs.

The installer also quietly informs you that buying *Speed Doubler* (£53 from Computers Unlimited on 0181 358 5857) will increase your rendering speed by up to 25% (that's an hour off a four-hour render!). If *LightWave's* creator Newer Technology is aware of optimisation to this degree, surely it could have incorporated it into *LightWave* itself, or at least have bundled *Speed Doubler* with the program. According to Newer Technology, it's the Mac's operating system that slows rendering, and things improve, they say, if you're using System 7.6.

LightWave 3D is composed of two programs: one for creating, modifying and setting attributes for objects – *Modeller* – and the other for positioning objects, defining surfaces and movement, creating animations, modifying lights and camera, and rendering the final output – *Layout*. Other packages on the Mac use this approach of separate applications to reduce overall memory requirements, such as *Form•Z, Amapi,* and *Electric Image,* but none quite to this degree. Most have a separate renderer with all the other 3D aspects being handled by the main application. *LightWave's* way of working may put some people off as it's not particularly intuitive. As for the memory overheads, if you're spending £1,100 or more on a piece of software, a few hundred pounds more on extra RAM is unlikely to cause you too much grief.



Powerful built-in object deformers include bend, twist, magnet and many more.

Getting your hands dirty

On running the program you are thrown into a totally different work environment – forget all the things you have grown to love about the Mac's operating system and go back in time to an interface that

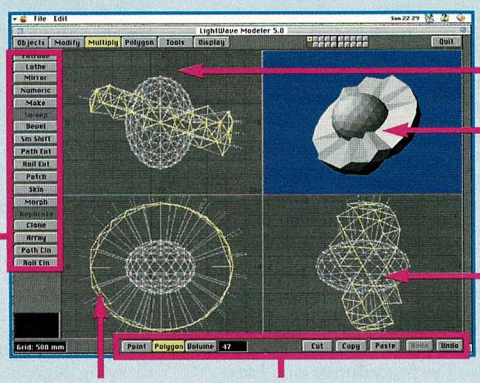
How to install LightWave 3D

Installing *LightWave* is ludicrously tricky. We got this information from the Internet as it wasn't in the manual. You can't move or rename the installed files, and the whole lot must sit inside the NewTek folder.

1. **Insert *LightWave* CD**
2. **Double-click the LightWave3D icon**
3. **Read the ReadMe file in the NewTek folder!**
4. **Double-click on Install LightWave3D**
5. **If there is not an OK button on the *LightWave* splash screen, hit [return]**
6. **Press OK to continue**
7. **Drag the Install LightWave icon onto the hard drive where you want to install *LightWave*. Make sure that the name of your hard drive does not have any spaces**
8. **Wait until *LightWave* installs**
9. **Click Quit**
10. **Double-click the hard drive where you installed *LightWave 3D***
11. **Open the NewTek folder and double-click on Config Maker application**
12. **Select Config File from File menu on the top menu bar**
13. **Go to Newtek:Programs and then find LWConfig**
14. **Open LWConfig (you will not find anything inside, but the data will be transferred)**
15. **Select Config File, again from the File menu on the top menu bar**
16. **Go to Newtek:Programs and then find LightWave Modeller Prefs**
17. **Open LightWave Modeller Prefs (you will not find anything inside, but the data will be transferred)**
18. **Select Quit from File menu**
19. **Open the Programs folder in the NewTek folder and double-click LWConfig**
20. **Find ContentDirectory, about four lines down from the top**
21. **Type a path to the NewTek folder after the words "ContentDirectory" – say ContentDirectory harddrive:Newtek**
22. **Save the changes and close the window**
23. **Open the Programs folder inside the NewTek folder**
24. **Open your System Folder and find the Preferences folder**
25. **Hold down [option] and drag LW Modeller Prefs from the Programs folder into the Preferences folder**
26. **You're done! Launch and have fun!**

Inside the interface

***LightWave's* interface uses few of the standard Mac conventions, which makes it all the harder to learn.**



Top view. You can set *LightWave* to show all four windows at once or a single viewpoint.

Preview window. This shows you how the model will look when rendered. This one is using QuickDraw 3D.

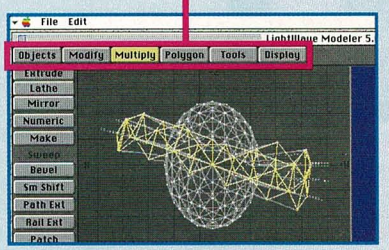
Commands in *Modeller* are ranged down the left-hand side of the screen. These are accessed by the button-bar at the top.

Side view. As you work on the model, each of the views updates to reflect your changes.

Face view, looking at the object from the front without perspective.

The button bar at the bottom contains commands usually found in the Edit menu such as Cut, Copy and Paste.

The button bar at the top in *Modeller* splits the commands up into sections. Confusingly, the Extrude and Sweep tools are under the Multiply button instead of the Modify palette where you would expect them.

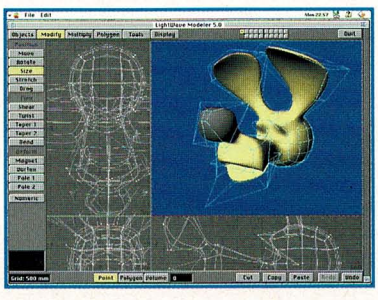


Moses might have chiselled out of one of his Tablets. *LightWave* ignores many of the Mac's interface conventions and common commands.For example, **Save** acts like **Save As, Close** acts like **Quit** and if you **Clear** a document (*LightWave's* equivalent of **Close**), this seems to stop *LightWave* opening another document until you restart the program! The distributors tell us that these problems aren't consistent, and different users and Macs give a variety of different errors. This response does not inspire any more confidence in the program's stability!

LightWave 3D looks and feels different from most Mac programs. On opening *Modeller*, you are presented with a single grey window. This contains all the program's functions; only the basic Mac commands (**Open**, **Save**, etc) are available from the menu bar. Along the top of the window are buttons which activate a new set of commands, options, and tools in the button column down the right-hand side of the screen.

The rest of the window is given over to the object views: top, side and front, plus an orthographic preview. The last can be configured to show wireframe, flat-shaded, or QuickDraw 3D shaded views, but the screen redraw is slow compared to other programs such as *Strata StudioPro*. The four-window setup is optional, and you can change this to view a single window at a time by either dragging the centre of the view windows out to whichever view you wish and hitting the **A** key to expand to fit, or by assigning separate views to the number keys on the numeric keypad.

Every conceivable object creation and manipulation tool is there in *Modeller*, from basic spheres to more unusual things such as "Eagle in a barrel" and "Teapot". *Modeller* has ten "layers" that store object parts which you can use either together or as modifiers. Each layer can be either visible or invisible, active or background (non-editable). This system is confusing to start with as it's unintuitive and you have to **[shift]**-click to view several layers at once. It becomes easier with practice, but it adds to the already steep ski-slope learning curve.



MetaNurb™-based objects produce more realistic, rounded models and are rather like clay to work with.

The modelling tools

Creating a profile to use as a template for creating a 3D object is handled oddly. Instead of drawing a bezier curve, you make up the profile out of individual points. The profile uses a beginning and end control point, and several points in-between which you can specify. *Modeller* then uses these to create the curve (the manuals are very unclear on this aspect, mainly because they are badly written and make use of lots of jargon). Alternatively, you can use the **Sketch** tool (similar to *Illustrator's*).

Modeller supports PostScript Type 1 fonts, but only the PC versions, not the ones on your Mac – a bizarre and irritating omission. However, the package comes with a good number of PC Type 1 faces, and the text object creation in the program is superb. It's just a shame you can't use your own fonts – unless you import them as *Illustrator* paths.

Once you have created basic objects, there are some powerful modification tools at your disposal. There's the standard move, rotate, size, stretch and drag, as well as shear, twist, taper and bend. The **Magnet** tool is particularly interesting: drag a marque over the area of your object you want to modify and while holding down **[command]**, drag again to distort the area selected. The **Vortex** tool creates a vortex-like 3D deformation in the area you specify along a single axis (x, y, or z). **Pole 1** and **2** enable inflation or deflation of your object along one or two axes respectively.

The **Multiply** panel is for creating objects from profiles. Functions such as **Extrude**, **Lathe**, **Mirror**, and **Extrude along a path** are found here. **Smooth Shift** is a cool tool, enabling areas of objects to be smoothly pushed or pulled from a surface. Two-section **Skinning** and **Metamorphing** are present to create shapes with two or more profiles. The **Clone** and **Array** facilities are exceptionally useful for creating duplicates of objects in a set pattern, be it in 2D or 3D.

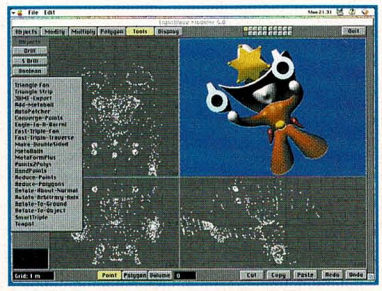
The **Polygon** panel is for creation and modification of polygons. The **Subdivide** tool is for generating more polygons on surfaces, giving a greater degree of 3D detail and therefore greater control, and the **Surface Property** options are for naming and defining surfaces. Lastly, the **Tools** Panel is the most fun for object creation, including **Drill** for drilling a 2D or 3D object from another, resulting in a hollow object. The Boolean operations are as fully-featured as they can be, enabling you to add, subtract, intersect or unify your object parts. The roughening and smoothing object tools can be of great use for modifying the surface of the object.

Once you've created your object, you can in most cases hit the **[tab]** key to transform it into a "Metaform", which creates a NURB (Non-Uniform Rational B-spline) cage for the object. This produces an incredibly smooth and organic feel to the object. After further tweaks, you can freeze your metaform object for export to *Layout*.

Layout is where you assemble your 3D scene and render the finished image or animation. Oddly, *Layout* will not ➤

A new wave

As we went to press, we heard that *LightWave 5.5* has been announced. This next version should have a new interface, 500% speed increase in the IK routines, and multi-threading, to name but a few of the changes to come. We suggest that you take a look at it before you buy!



***LightWave* comes with an extensive range of plug-ins which add to the programs features. Some of them produce, frankly, weird results. Check out "Eagle in a Barrel!"**

LightWave **can easily produce effects which are technically very difficult to achieve, such as realistic flame and fire effects.**

accept the NURBS or spline-based models you can produce in *Modeller* – they must first be converted to polygon-based objects. While this doesn't present a problem for *LightWave*, surely it would have been better for *Layout* to be able to cope with this type of model?

The raytracing algorithm itself is top quality, although not as fast as some other programs' raytracers (*Cinema 4D's* for one – see our review in MACFORMAT 50). In terms of speed, it is much the same as *Strata StudioPro 2.0*. However, as you can see from the examples on these pages, the quality of the raytracer's results is undeniable.

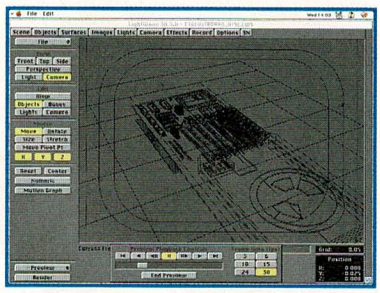
As *LightWave 3D* is aimed at the professional production market, it has some special features not found in other programs – such as the ability to distribute rendering tasks to as many as 1,000 networked CPUs. It also has a huge maximum frame resolution of 8,000 by 8,000 pixels (58 x 58cm at 350dpi).

The number of options in *Layout* is almost as bewildering as in *Modeller*. The interface looks and works in a similar way, but clicking the buttons along the top brings up dialogue boxes (rather than panels) which contain more options. *Layout's* functionality is intense, although with practice it becomes more versatile. It's not unlike other 3D modelling programs in this respect – they are all hard to get used to and all have their own little idiosyncrasies.

However, *LightWave's* learning curve is compounded by the fact that very little of the program conforms to the Mac interface. Again, we'd recommend not using the commands in the Mac's menu bar at the top. They don't do quite the same things as the standard Apple menu commands, and you'll be much less confused if you stick to *Layout's* versions of these commands, which you'll find duplicated in the main window.

The lighting effects are most impressive, including a large array of lenses, effects and shadow types to choose from. The animation facilities are second to none and include advanced Inverse Kinematics, which links objects in a way that makes movement more realistic – so that when you move a hand, say, the arm and shoulder follow convincingly. The program uses "bones" to deform objects in the bones chain (and others attached to it) in a realistic way. For example, giving a kettle life and deforming it like a ball as it jumps without having to use morphing (a feature that "melts" one object to form another). Joint compensation and muscles act as deformers for objects in a bones chain. These give animated figures realistic muscle movements as they move. Using metaform object generation in *Modeller* and muscles in combination with bones and Inverse Kinematics in *Layout* can put to shame the human figures made by *Poser 2* (see the review in MACFORMAT 50).

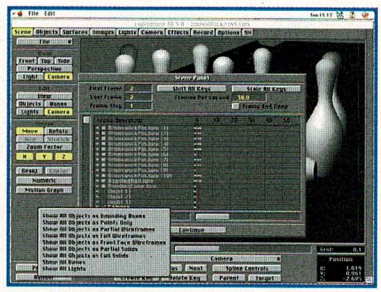
When all your objects have been imported, you can start to define the surfaces and textures for each. All the usual texture-mapping functions are here as well as procedurals (solid textures) like wood and marble. The ability to deform objects and cut away sections with textures is also very useful. Distance dissolve is a fun tool which enables you to specify an object's transparency depending on how far away it is from you.



Animation previews can be made to more accurately visualise your sequences before rendering the finished animation.

Getting it out

The animation system is based on the classic time-line and event marker system. Define a time-line (for instance, 10 seconds at 24 frames per-second), modify each item to be affected at defined markers along the time-line, and your Mac works out how each object moves for each frame. However, the final stage of setting up for output could be much simpler – all the options are not in the same box, and you have to go through three separate panels: animation frame rate first, then the **Camera** panel, and finally the **Render** panel. Again,



The Scene Panel in *Layout* enables you to control the time-line and individual object attributes in your animation.

though, you can't fault the level of options available, including anti-aliasing to dizzying degrees of complexity, depth diffusion, motion-blur and particle-blur, to name but a few. If you do come up with an option that you feel has been omitted and you just can't do without, Newer invites you to get in touch and explain your needs. If there isn't already a plug-in to help, the company will look at your requests in its on-going multi-platform upgrade programme.

Once you've finished your animation sequence and rendered a few previews within *Layout*, you'll be ready to save your animation or still as a final image or movie. (Make sure there's no spaces in the filename or your hard disk name!)

In all, *LightWave 3D* feels like a development version of the program rather than a finished product – particularly since it crashes if you pre-empt it – that is, work faster than it can, by pressing a number of keys in quick succession as you can do with most Mac programs. This is because the Mac version doesn't yet include a full error handler and tends to crash when it comes across something unexpected. Not ideal!

For the design, creation, manipulation and final output of virtual realities, *LightWave 3D* is certainly very capable, using the powerful *Modeller* to create and *Layout* to finish the job. You can also request a free demonstration (lasting three or four hours) before you buy it. But you'll need this, because the program is so un-Mac-like and has such a steep learning curve. Combined with the frequent crashes and lack of support for something as basic as a Macintosh PostScript font, it leaves much to be desired. If Newer Technology fixes the bugs and gives it a decent Mac-like interface, this could be a killer 3D application. Until then, though, you'd be better looking at less sophisticated packages. For all its undoubted strengths, we couldn't recommend buying the current version, unless you *really* need some feature that only it can offer.

LightWave 3D

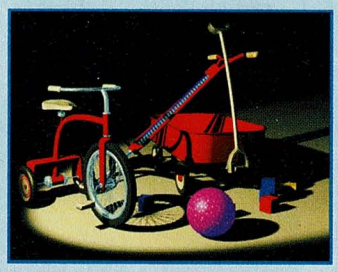
A comprehensive 3D program capable of stunning professional results, but very badly ported to the Mac. Wait for the next version.

Features	**91%**
Ease of use	**60%**
Documentation	**58%**
Value for money	**70%**

MF rating 68%

LightWave: quality vs speed

LightWave **may produce stunning results, but how fast is it? We took a ready-made scene and rendered it in both *LightWave* and *Cinema 4D* on a PowerMac 8500/180 with 96Mb of RAM, allocating 64Mb to each program. The results are on the right. *Cinema 4D* took a mere 41 seconds to produce this image; *LightWave* took 79 seconds.**



LightWave **took nearly twice as long to render the image, but you can see the quality in its shadows.**

Cinema 4D **whipped through the render, but the amount of detail is less impressive.**

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SuperCard 3.0

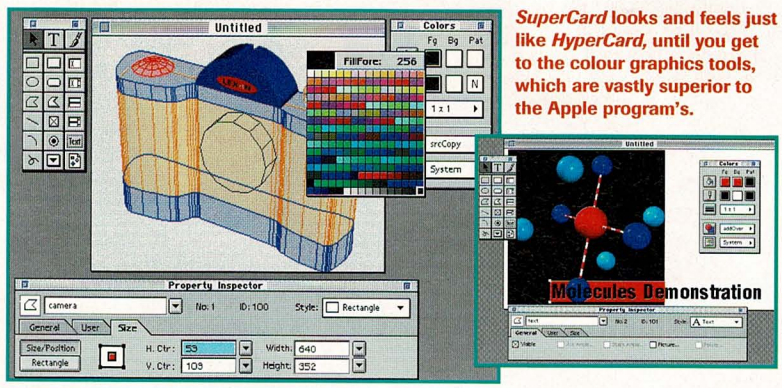
It's an object-oriented programming language, a multimedia authoring application and an interactive Web content delivery system. "Is there anything this program doesn't do?" asks Rod Lawton...

The multimedia authoring market is turning into a very confusing place. If you want to produce an interactive multimedia application, you can approach it from a variety of angles. You could, for example, use *Apple Media Tool*, *Macromedia Director*, or one of the other programs that works by "choreographing" objects on a stage. As an alternative, you could opt for a business presentation tool (such as *Astound*), which starts with the message you want to communicate and then works in your sound and graphics around that. Or instead of either of those, you could use *SuperCard*, which combines the power and flexibility of a true object-oriented programming language with pictures, movies, text and sound.

Does that like a description of Apple's venerable *HyperCard*? It should, because the programs are very similar. So similar, in fact, that they use the same concepts of "cards" and "backgrounds", and once you realise that *SuperCard's* "windows" are equivalent to *HyperCard's* stacks in functionality, it all clicks into place.

However, that's where the comparison ends. In *HyperCard*, it's standard practice – recommended, even – to link lots of smaller, simpler stacks, rather than create a single, large, unwieldy one. It makes your programs run more efficiently and easier to debug, too. Keeping all these stacks together is a nuisance, though, especially when you have to transport them from one machine to another.

SuperCard's answer is "projects". These are like "super-stacks", single files that can contain any number of windows (or "stacks"). They can't get lost or separated, and this, combined with *SuperCard's* excellent authoring tools and interface, makes it a much slicker development tool to use.



SuperCard **looks and feels just like** ***HyperCard,*** **until you get to the colour graphics tools, which are vastly superior to the Apple program's.**

Asynchronous file access

This is a very clever technique for minimising delays online. It means that *SuperCard* projects can request a file from an Internet server and let you get on with other jobs while they're being sent.

Stand-alones

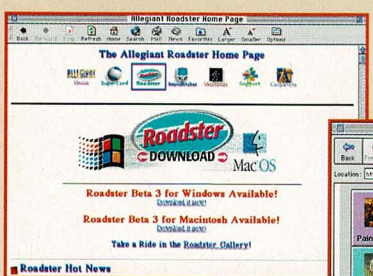
It's possible to make stand-alone *SuperCard* applications, although first you'll need to go through a tricky configuration process. The *SuperCard* user guide shows you how, and also explains how you should credit *SuperCard* in the finished application (including the logo and amount of white space you should leave around it!).

The pros and cons

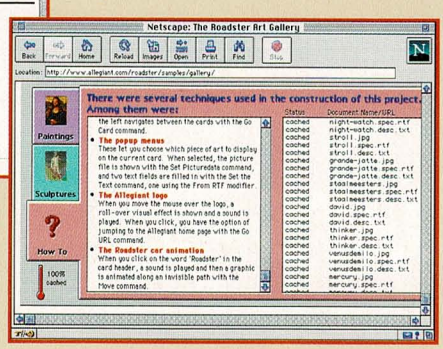
SuperCard betters *HyperCard* in other respects, too. It has 8-bit colour tools built-in for a start, while *HyperCard* still struggles along with mono 1-bit graphics. Yes, *HyperCard* does come with a **Colour Tools** stack to redress the balance, but it's hopelessly slow and clunky compared

On the SuperHighway with Roadster

How does the *Roadster* plug-in work, or any browser plug-in, for that matter? *SuperCard* projects designed for Web use have the .sca extension, which identifies their MIME (Multi-purpose Internet Mail Enclosure) type. This enables your browser to identify the plug-in it needs to display the project, which then appears in a frame on a Web page, or as a separate, stand-alone item (depending on whether you embedded it in an HTML document or accessed it as a file).



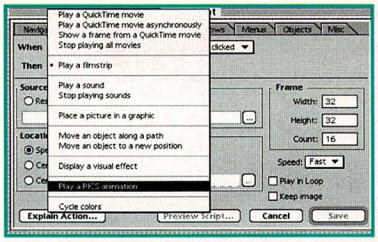
You can view your *SuperCard* projects on the Internet, although you'll have to download the *Roadster* plug-in from the Allegiant Website first.


Netscape: The Roadster Art Gallery
There were several techniques used in the construction of this project. Among them were:
Paintings
Sculptures
How To

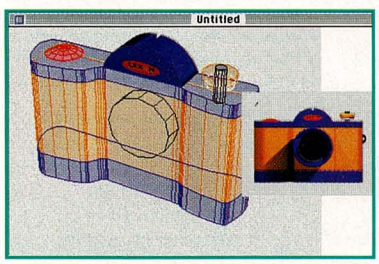
Once the *Roadster* plug-in is installed, you can view Web pages with clickable tabs, scrolling text fields, animations and other multimedia luxuries.

The Internet's biggest problem, though, is bandwidth – or lack of it. Big graphics, in particular, take a long time to download, especially via a standard dial-up connection, so you'll need to optimise your projects for Web use. Thankfully, *SuperCard* has several tools to help you do just this:

- ***SuperCard*** **enables "graphics-streaming". In other words, GIF and JPEG images can be displayed promptly in a low-res form, which progressively develops into a high-res image. This enables you to see what the image is, without waiting for it to finish downloading.**
- **Images can be requested as soon as the project is opened. They're then**



Playing PICS and QuickTime animations is easy, thanks to the semi-automatic script-building tools. You can carry on with other tasks while the QuickTime movies are running, and you get precise control over where the Movie window is positioned (as in the shot below).



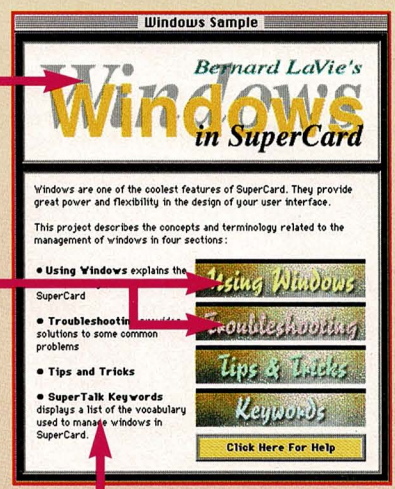
Parts of a project

***SuperCard* projects are complex, multi-layered documents. Each project consists of one or more windows, and each window can have any number of cards or individual screens. These cards can share the same background or have unique backgrounds, and both the cards and the backgrounds can have images, buttons and fields.**

You can use the buttons to navigate from one card to another, or to perform much more complex tasks. Many everyday scripts are included in the Project Editor, so you never have to learn SuperTalk, *SuperCard's* underlying scripting language. But once you do, *SuperCard* becomes a powerful programming language, not just a multimedia authoring tool.

Graphics: *SuperCard* supports both bitmap and vector graphics.

Buttons: these carry out actions such as linking to another card, playing a movie or performing complex calculations or heavyweight data manipulation.


Windows Sample
Bernard LaVie's
Windows in SuperCard
Windows are one of the coolest features of SuperCard. They provide great power and flexibility in the design of your user interface.
This project describes the concepts and terminology related to the management of windows in four sections:
• Using Windows explains the
SuperCard
• Troubleshooting
solutions to some common problems
• Tips and Tricks
• SuperTalk Keywords
displays a list of the vocabulary used to manage windows in SuperCard.
Using Windows
Troubleshooting
Tips & Tricks
Keywords
Click Here For Help

Text fields: these can be plain or scrolling, and you can mix fonts, sizes and styles in the same field.

to its rival. *SuperCard* can also create vector graphics as well as bitmaps…

What's more, *SuperCard* has direct support for animation. It can replay filmstrips (single PICT images containing a succession of animation frames) and PICS animations, a format also used by *Director* and other multimedia applications. It's easy to create your own PICS animations within *SuperCard*, too. In fact, it's a highly accomplished multimedia authoring tool that combines the ability to orchestrate 24-bit graphics, QuickTime movies, text and sounds with the tools of a fully-featured programming language.

It's in the script

Uh oh, it's that word – "programming". Fortunately, as programming languages go, SuperTalk – *SuperCard's* programming language – is fairly easy to get to grips with. This is especially true if you are familiar with *HyperCard* – the commands and syntax are essentially the same. In fact, SuperTalk is reckoned to be a "superset" of HyperTalk, containing all of HyperTalk's commands, plus some new ones. This compatibility even extends to *HyperCard's* external commands and functions (XCMDs and XFCNs), most of which, claims the developer Allegiant, will work with *SuperCard*.

In use, though, the two programs are quite different. For once, it's *SuperCard's* turn to feel unnecessarily clunky because it operates in two distinct modes – "design" versus "run". In *HyperCard*, you can check your stack's scripts as soon as you close the **Script** window, while in *SuperCard* you have the extra step of switching modes. You might even need the separate application *SuperEdit*, depending on the changes you want to make. *SuperCard's* authoring environment is excellent except for this complication, which surely should have been ironed out by now, especially since the interface has gone through a major overhaul with this version.

Easier editing

One of the biggest changes you'll find is in the editing environment. In previous versions, you had to do all the major construction work – creating windows, cards, backgrounds, graphics and scripts – in the *SuperEdit* application. After that, you had to switch to the *SuperCard* ➤

What's a CLUT?

24-bit colour images look terrible when dithered to 8-bit, 256-colour images because they're the wrong 256 colours. *SuperCard* uses CLUTs (Colour Look-Up Tables) stored in your projects to swap the default colour palette for one that better matches the colours in an image – and does this *on the fly* as new images are displayed.

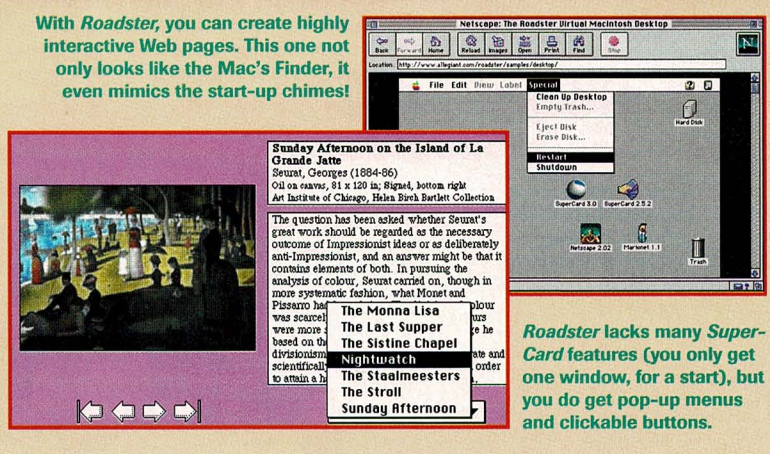
downloaded in the background and stored in the browser's cache. Thus, when you want to display them, they appear almost instantaneously.

- **Projects can also communicate with Internet servers, thus making it possible to create on-line database interfaces, interactive catalogues and even games.**

There are other ways you can speed up your on-line projects:

- **Replace 24-bit graphics with eight-bit images. You can do this either by resampling and dithering them in a paint package, or by using a CLUT (Colour LookUp Table) which also uses only 256 (8-bit) colours but matches them to those in the original image to give near-24-bit quality.**
- **Make sounds shorter or lower quality.**
- **Use vector graphics rather than bitmaps – *SuperCard* can work with both bitmap and vector-based PICTs.**
- **Separate the structure from contents. In other words, get your project to access external files when it needs text, graphics, animations and so on. This means that the "skeleton" of the project can download quickly and start working straight away.**

With *Roadster*, you can create highly interactive Web pages. This one not only looks like the Mac's Finder, it even mimics the start-up chimes!


Netscape: The Roadster Virtual Macintosh Desktop
Sunday Afternoon on the Island of La Grande Jatte
Seurat, Georges (1884-86)
Oil on canvas, 81 x 120 in; Signed, bottom right
Art Institute of Chicago, Helen Birch Bartlett Collection
The Monna Lisa
The Last Supper
The Sistine Chapel
Nightwatch
The Staalmeesters
The Stroll
Sunday Afternoon

***Roadster* lacks many *SuperCard* features (you only get one window, for a start), but you do get pop-up menus and clickable buttons.**

application to test your project and do all the fine-tuning and last-minute tweaks. Fortunately, *SuperCard* came with its own cut-down runtime editor which enabled you to fix most things, so that you didn't have to quit *SuperEdit* and start it up again too often.

Version 3 of *SuperCard* has a vastly improved runtime editor – the **Project Editor** – so much so, that this is where you'll do most of your editing and authoring. *SuperEdit* is still waiting in the wings, though, for those jobs that are too tough for the standard tools, such as moving menus and resources ("non-physical" items), and for changes that can't be made while the project is "live", such as altering backgrounds.

It all seems messy and unnecessary, and if *HyperCard* can switch seamlessly between development and testing, why can't *SuperCard?*

New plug-in

Bandwidth limitations mean the *Roadster* plug-in can't reproduce the full range of *SuperCard* effects, but Allegiant is working on an Intranet version which will take advantage of the much higher speeds of company networks.

Internet publishing

Even bigger news than the interface changes is *SuperCard's* new "Internet-ready" status. Allegiant has produced a browser plug-in called *Roadster*, which is effectively a cut-down *SuperCard* player that operates within your Web browser. Projects can either be embedded within ordinary HTML pages or be stand-alone items. The *Roadster* plug-in is freely available from the Allegiant Website at **http://www.allegiant.com/**.

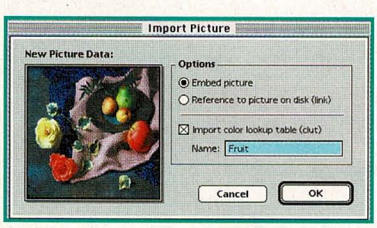
SuperCard 3's other enhancements include additional commands that enable you to confine visual effects to single objects, style chunks of text within fields and debug scripts more easily, among other things.

The one add-on that's been promised since Allegiant first took over *SuperCard* – and which is still yet to materialise – is the Windows player. Your *SuperCard* projects (except for *Roadster* Web-based projects), will still play only on Macs, and this is bad news. It means that *SuperCard* is only going to interest those developing solely for the Mac platform, and any publishers who want to produce both Mac and Windows versions are likely to find a cross-platform tool such as *Director* or *QuarkImmedia* far more tempting.

The bottom line

All of this makes *SuperCard 3.0* a bit tricky to recommend. If you have a previous version and want to know whether it's worth upgrading, the answer is yes. The **Project Editor** is a vast improvement on the old way of doing things, and the *Roadster* plug-in is a very useful tool for company Intranets or other captive audiences. (Let's face it, who else is going to want to download and install yet another browser plug-in?)

If you're not an existing convert and are just shopping around for a straightforward multimedia authoring tool, though, you'll find leaner, fitter and probably cheaper programs elsewhere. And if you really want an object-oriented programming tool, again you might do better looking elsewhere. However, if you need a combination of those two things, *SuperCard* fits the bill perfectly, and it makes *HyperCard* look like the decaying old relic it is. **MF**



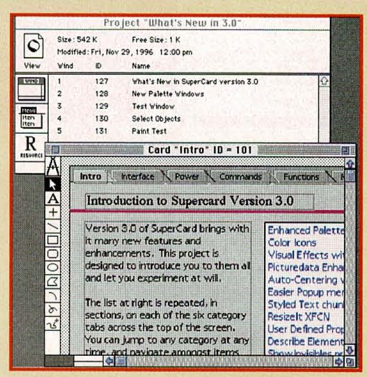
How do you get 24-bit photo-realistic images to squash down into 8-bit files for Internet use or for those with 256-colour monitors? You can let the System dither images, which gives poor results as a rule, or create custom 8-bit palettes (CLUTs) in your image-editing program, which *SuperCard* can then import to give much better results.

What is SuperEdit?

If *SuperCard 3.0* comes with a fancy new runtime Project Editor, why do you still get *SuperEdit*, the program previously used for putting your projects together? Well, powerful though the new Project Editor is, it seems that Allegiant still couldn't build in all the functionality provided by *SuperEdit*. Specifically, you still need *SuperEdit* for:

- **Converting *HyperCard* stacks into *SuperCard* projects (mostly, but not always, successful, incidentally)**
- **Editing icons and cursors**
- **Editing CLUT tables**
- **Replacing backgrounds**
- **Autotracing buttons and graphics**
- **Copying and pasting windows, menus or multiple cards**
- **Multiple script editing**

Annoyingly, Allegiant still hasn't managed to distil the *SuperCard* interface into a single environment, unlike *HyperCard's* very simple test-and-go tools.



For really low-level project editing, you'll still need the *SuperEdit* application rather than the new Project Editor.

SuperCard 3.0

Multimedia authoring and object-oriented programming combined, with all the complexity that brings. Powerful but patchy.

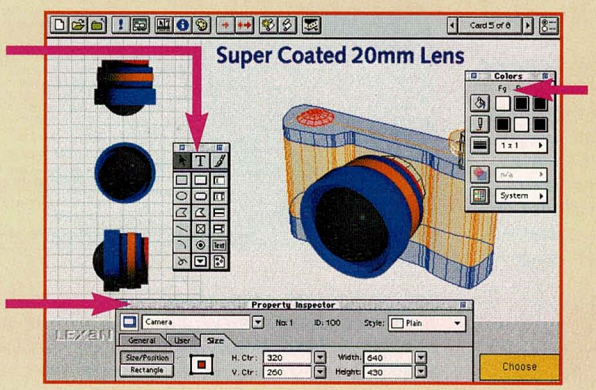
Features	**81%**
Ease of use	**89%**
Documentation	**90%**
Value for money	**88%**
MF rating	**84%**

Tools of the trade

One of the biggest changes in *SuperCard 3.0* is the new Project Editor, which replaces the old and rather sluggish runtime editor. Now you only need the separate *SuperEdit* application for low-level reorganisation and some of the more arcane settings and adjustments.

Tools Palette: here you'll find all of *SuperCard's* painting, drawing, button, field and text tools.

Property Inspector: *SuperCard* objects have many different properties, including scripts, size, position, colour and more. This tabbed palette keeps a multitude of settings within easy reach.



Colours Palette: as usual, you can choose line and fill colours. What's not so usual, though, is that you can set both the foreground and background colours of the supplied patterns. From this palette, you can also choose custom colour palettes and apply different ink effects according to how you want overlapping graphics to combine.

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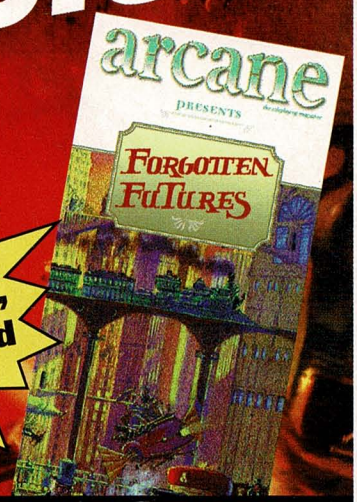

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Conflict Catcher 4

Not an antidote to EastEnders, this program reckons it can solve all those mysterious Mac crashes we all suffer from. Is it all it's cracked up to be, and will it still leave you cursing?

The Mac may be the easiest and friendliest computer to use, but it still suffers from the scourge of all computers: crashing and freezing. Ironically, because it is so easy to customise and add extras, as a Mac owner you can often suffer more troubles than your PC cousins, who find it too much bother to do the same.

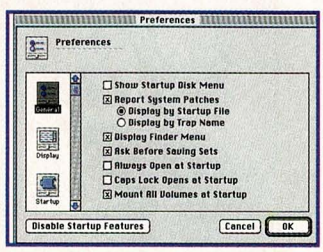
The most common method of adding extra System functionality is to install Control Panels and Extensions into your System Folder. Sometimes you'll add them deliberately, but sometimes applications do this without your knowledge during their installation. This can lead to a System Folder packed with Extensions vying with each other to do their thing.

And now add to this the complication of regularly-updated System software, and you have a recipe for a crashy Mac. Sometimes your Mac will crash during the startup process, sometimes it will start up, only to sit there wobbling, just waiting to fall over. Not all crashes are caused by these System conflicts, but enough come from this area to demand a method of taming the System Folder. Into the arena comes *Conflict Catcher.*

Its job is to find out which Extensions are at war, and help you decide which ones to disable. It does this by a process of elimination, systematically restarting your Mac with different combinations of Extensions loaded, until it's confident that it's found the offending pair.

You can, of course, do all this yourself, but *Conflict Catcher's* argument is that it can do it much more efficiently. For instance, it records when each Extension was installed, and so focuses on the latest arrivals. Also, because a Mac can take several minutes to start up, and because quite a few restarts are required to confirm the culprits, the whole process can take a lot of your time. *Conflict Catcher* will carry on automatically in your absence, while you find some aspirin.

This may well be the program's main selling point, but it is capable of a lot more. With so many new technologies around, such as the Internet, QuickTime and OpenDoc, you need an increasing number of Extensions, which eat more and more RAM. But do you need all of these Extensions all of the time? The answer is probably "no".

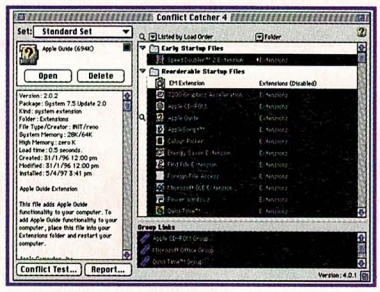


There is a plethora of preferences encompassing just about everything you can think of.

Conflict Catcher can help with this, enabling you to create sets of Extensions for certain tasks. For instance, when you only want to play a game, you won't need half your Extensions. You can carefully select and save a limited set of only the Extensions necessary for gaming, thereby freeing up memory for your game. Holding down a user-definable key at startup will open *Conflict Catcher's* window, enabling you to select the desired set from all the ones you have created.

What's more, a simple click on any Extension in *Conflict Catcher's* window explains what it does. This is extremely useful, and something that Apple's *Extensions Manager* doesn't do. *Conflict Catcher* knows about all of Apple's Extensions, plus most common third-party ones, although you'll always find a few it has never heard of. Using this knowledge, you can create your sets or permanently delete Extensions you don't need (but do take care with this).

Conflict Catcher 4.0 also has the ability to handle plug-ins for programs such as *Netscape, QuarkXPress,* and *Photoshop.*



Instead of dragging icons around, you can enable or disable Extensions by simply clicking on their names and restarting.

These don't often cause problems, but it's good to have the option.

So, are there any problems? Well, the 270-page manual is not easy to follow. It explains every detail in depth, several times, which only serves to confuse you. Also bear in mind that *Conflict Catcher* doesn't do anything you can't already do. Isolating conflicting Extensions can be done manually; it's just a boring job. Creating sets of Extensions can be done with Apple's *Extensions Manager,* part of System 7.5; it's just not as powerful, and doesn't handle application plug-ins.

Conflict Catcher will only cure crashes that are due to Extension conflicts. Many crashes come from corrupted files or badly written programs, which this program can't help you with. It just doesn't do enough to justify its price, and *Now Utilities,* for instance, has a utility that's very similar, yet it costs less and does tons more.

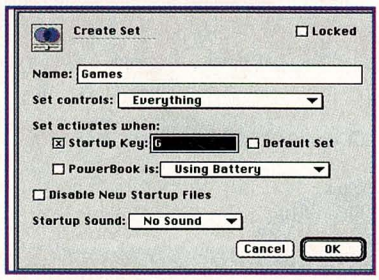
DEREK SMITH

Conflict Catcher 4.0

Eases the drudgery of sorting out Extension conflicts and helps to free up RAM, but it's expensive and limited.

Features	**63%**
Ease of use	**81%**
Documentation	**68%**
Value for money	**65%**

MF rating 72%



A useful feature for PowerBook owners is the ability to load differing sets of Extensions, depending on whether it's running from the mains or battery.

Import

Conflict Catcher 4 can import sets from previous versions of the program, plus similar products including Apple's *Extensions Manager* and *Now Utilities.*

System 7.6

Conflict Catcher 4 is bang up to date, being fully aware of System 7.6 and its many Extensions.

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PRICE	£339	ON SALE	Now	CONTACT	Yamaha on 01908 366700	WEB SITE	http://www.yamaha.co.uk/
MAC	Processor: any	POWERMAC	Processor: any	REQUIRES	DIN lead (around £5) • Sequencer software to record music		

Yamaha CBX-K1XG MIDI Sound Keyboard

At last there's a low-cost, all-in-one solution to making music with your Mac. Ian Waugh looks at the K1 from Yamaha – a combination keyboard, MIDI controller, sound module and MIDI interface in one.

Jargon busters

Envelope: the "shape" of the volume of a sound, typically divided into four phases. If the first phase (Attack) is fast, the sound starts as soon as you press a key and produces a percussive sound.
Program change: a MIDI instruction that selects a sound or "program" on a synthesiser or sound module.
Sequencer: a piece of software that records the MIDI data (notes, program changes and so on) generated by a MIDI device, and then enables you to edit it and replay it.
Step-time: the process of entering a piece of music into a sequencer one note at a time.
Touch sensitive: a keyboard feature whereby the harder you press a key, the louder the sound.

ON THE CD

Shareware program *XGedit*, used for editing aspects of the XG system. In **Shareware Plus** folder.

Have you ever heard the phrase "desktop music" or DTM? Following on from (and cashing in on) the earlier DTP (desktop publishing) trend, DTM was designed to promote the idea that anyone with a computer on their desktop could make music.

And it's true, anyone can. The main drawback is the initial outlay. Unlike DTP, where you can achieve a lot with little more than a word processor, to make music you need MIDI interface, a sound module, an input device (such as a keyboard – the musicl type), and a sequencer to record and edit the music.

A MIDI interface enables your Mac to talk to musical instruments. It plugs into your Mac's printer or modem port, and it has MIDI In and Out sockets for connecting to MIDI equipment. You also need a sound module or synthesiser to generate the sounds and play the music. There are dozens of these on the market, from top, fully-fledged synthesisers to more modest sound modules. For desktop music, the most popular instruments are General MIDI compatible. In fact, GM is essential if you want to play MIDI files produced by other people.

Next, you need something to record your music. Most people use a keyboard, which makes it fairly easy for beginners to input notes, even if they use the "hunt-and-peck" method and enter them one at a time (in "step-time").

Finally, you'll also need a sequencer program. This records the MIDI data from the keyboard and enables you to edit it on-screen in more or less straightforward ways. There are several sequencers for the Mac, ranging from the budget-priced *Cubasis* (£129) up to professional programs such as *Cubase*, *Logic*, *Performer* and *Vision*, costing up to £400.

What you get

So what do you get with Yamaha's CBX-K1XG? Basically, everything but the software. The K1 is a small desktop-size keyboard. It has a "To Host" interface which connects to the Mac's modem or printer port using a standard mini eight-pin DIN lead. This lead is unfortunately not supplied, but you should be able to buy one easily for around £5. When the K1 is connected to the Mac, you can record into a sequencer and play back MIDI files. The K1 also has MIDI In and Out sockets, which enable you to connect more equipment to your set-up.

The keyboard has three octaves of mini keys. If you're used to full-size keys these will certainly seem small. The K1 is touch-sensitive, a rarity on such a low-cost keyboard, and you can select one of ten sensitivity settings. Although this is no Steinway Grand and you won't be able to play any Liszt sonatas on it, the K1 is good for recording music into a sequencer, especially in step-time. A couple of octave buttons enable you to shift the span of the keys, giving you access to the full ten-and-a-half-octave range of MIDI notes.

The sounds available – all 737 of them – are based on Yamaha's XG sound-set. They are used in various combinations in several modes, including GM, XG and TG300B, the last of which is, to all intents and purposes, Roland's GS mode (but they can't say so because Roland is a rival company). You get the best of all GM standards with the K1.

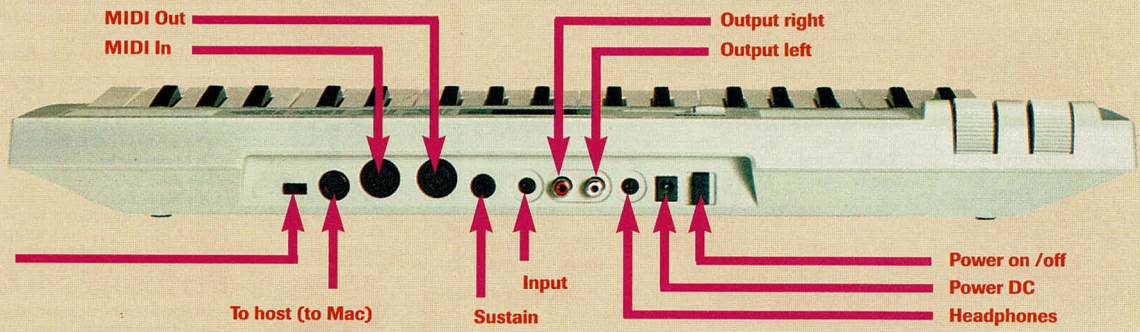
The sounds produced are excellent. Yamaha has developed a superb sound chip, which includes reverb, chorus and 42 other effect types. The K1's built-in speakers don't do the sounds justice, but you can plug the stereo output into

The Yamaha CBX-K1XG keyboard enables you to make music to your heart's content – the only extra you'll need is sequencer software, such as *Cubasis*, *Logic* or *Performer*.

You can select sounds in *XGedit* by clicking on the voice list.

What's on the back?

There's a vast array of ports on the back of the Yamaha keyboard. You can use these to plug the K1 into your Mac and any other audio equipment you have.



What's MIDI?

MIDI – "Music Instrument Digital Interface". It's a communications protocol for music information. Each music event has its own MIDI message. When you press a note, twiddle the pitch bend wheel or send a program change message on a keyboard, every action generates a MIDI message which can be recorded by a sequencer. Then it can be edited and played back to an instrument that plays the notes, activates pitch bends and changes programs accordingly.

a hi-fi or computer speakers.

What's more, there are 22 drum voices or sets. Unlike a normal voice, which plays the same instrument but at different pitches up and down the keyboard, each note in a drum voice plays a different drum sound. GS and XG tend to use eight drum sets. The additional sets have alternative drums, so, for example, the electro kit has electronic toms instead of acoustic; the analogue kit uses some analogue drums in place of acoustic ones; and the brush kit includes drums hit by brushes instead of sticks.

Control tweak

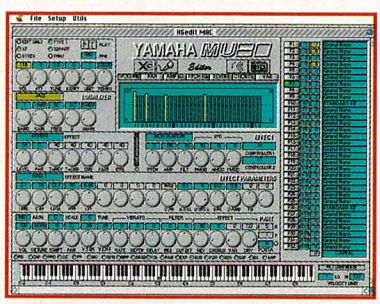
So far so good, but the K1 has a few more tricks up its sleeve. It can generate a range of MIDI controllers, which you can use to control various aspects of the sound including modulation, volume and panning. There are also functions for editing the sounds – a feature of XG – so you can tweak the envelope, apply a filter and adjust the effects.

This is excellent because not all instruments can generate such data and it can be difficult to record into a sequencer. To select most functions you have to hold down a button and press one or more keys – straightforward once you get used to it, but fiddly. This is an inevitable result of trying to keep the price down, and if you're a beginner you probably won't want to indulge in customising sounds anyway, but it's nice to know you can.

If you do want to edit the XG sounds, there is one essential piece of software you need – *XGedit*. This enables you to edit the finer aspects of the XG system without getting entangled in a web of MIDI controller data. In GM mode, you can use it to edit the parameters of other sound modules. You can play back a MIDI file from within the program and edit sounds on the fly while it's playing.

XGedit is shareware, and the registration fee is only £25. What's more, you'll find it on the Cover CD, in the **Sound** folder of the **Shareware Plus** section. (You will also need Open Transport installed if you want to open the Read Me file.) Alternatively, you can download it directly from the author's Web site, at **http://www.cybertheque.fr/galerie/GGregson/** The URL is case-sensitive, so take care when you enter it into your browser. And if you do use an XG sound-set, this is an excellent site to visit because it has links to other sites full of XG hints, tips and MIDI files.

Overall, this is a keyboard that enables you to achieve a great deal at a surprisingly low price. If you fancy exploring the world of music-making on your Mac but don't want to spend the earth, then the Yamaha CBX-K1XG MIDI Sound Keyboard is a good place to start. **MF**



***XGedit* is the ideal companion for any XG instrument, making it easy to select and sounds, and apply and adjust effects.**

Yamaha CBX-K1XG MIDI Sound Keyboard

Superb sounds and versatile control make this a useful, low-cost, all-in-one solution if you want to make music on your Mac.

Features	**92%**
Ease of use	**69%**
Documentation	**89%**
Value for money	**90%**

MF rating 85%

Win a Yamaha K1!

We like the CBX-K1XG keyboard so much, we got together with Yamaha to give you the chance to win one! Simply send us your answer to the question below on a postcard with your name and address.

Q. What does MIDI stand for?

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General MIDI explained

In the early days of electronic music, all musical instruments used to have their own individual sets of sounds. If you created a piece of music to give to a friend, they would need to play it on exactly the same equipment as you had originally made it on, otherwise it wouldn't sound the same – the bass line could be playing on a flute, the strings on a xylophone and so on. What's more, if the MIDI data was activating built-in effects such as reverb or chorus, they probably wouldn't work at all.

The solution was General MIDI, an agreed standard whereby all GM instruments have the same set of sounds. This has been further enhanced by Roland's GS standard, which enables additional sounds called Variations and reverb and chorus effects. Not be to outdone, Yamaha proposed a third standard called XG, which also includes Variation sounds and gives you more control over the sounds and effects.

Both GS and XG are backward compatible with GM. However, because of their extra features, if you play a GS or XG file on a GM instrument, it won't sound exactly as you intended it to.

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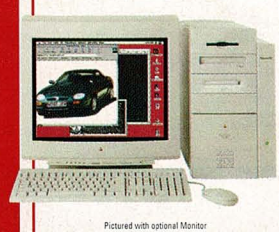

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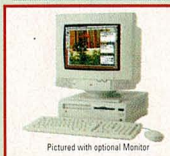

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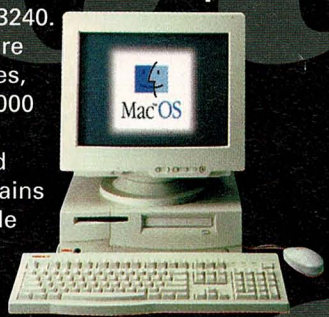

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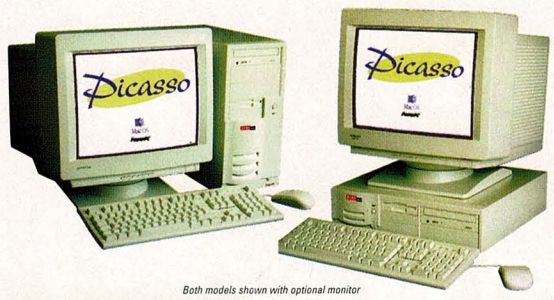

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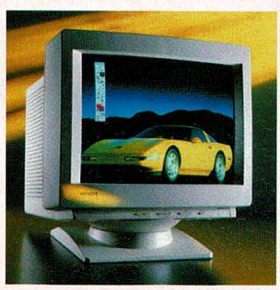

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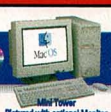

Mini Tower Pictured with optional Monitor

	3180 Desktop	3180 Mini Tower	3200 Desktop	3200 Mini Tower	3240 Mini Tower
Processor	180MHz	180MHz	200MHz	200MHz	240MHz
Memory	16Mb	32Mb	16Mb	32Mb	32Mb
VRAM	1Mb	1Mb	1Mb	1Mb	4Mb
Hard Disk	1.2Gb	2.5Gb	1.2Gb	2.5Gb	2.5Gb
PCI Slots	3	5	3	5	5
Drive Bays	2 External, 1 Internal	3 External, 2 Internal	2 External, 1 Internal	3 External, 2 Internal	3 External, 2 Internal
Price	£699	£899	£1099	£1249	£1599

StarMax 4000 Systems (PowerPC 604e)

Desktop Pictured with optional Monitor

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Memory	16Mb	32Mb	16Mb	32Mb
VRAM	2Mb	2Mb	2Mb	2Mb
Hard Disk	1.2Gb	2.5Gb	1.2Gb	2.5Gb
PCI Slots	3	5	3	5
Drive Bays	2 External, 1 Internal	3 External, 2 Internal	2 External, 1 Internal	3 External, 2 Internal
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SCSI D25M - HC50M	10	-	-
SCSI C50M - C50M	8	12	-
SCSI HC50M - C50M	10	12	-
SCSI HC50M -HC50M	10	18	-
SCSI HC68 - C50M	15	-	-
SCSI HC68 - HC50M	18	-	-
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M3912	CSW2200 Black Tank	12
M3911	CSW2200 Colour Tank	17
M3240	CSW2500 Black	24
M3328	CSW2500 Colour	31
M3330	CSW2500 Black Tank	8
M3329	CSW2500 Colour Tank	13
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S020049	Stylus II/IIs/200 Colour	18
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S020097	Stylus 200/500 Colour	18
S020108	Stylus 800 Black	10
S020089	Stylus 600/800 Colour	22
S020034	Stylus Colour/Pro Black	10
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S041069	A3+ Coated 720dpi 100sht	27
S041073	A3 HQ Glossy 10sht	32
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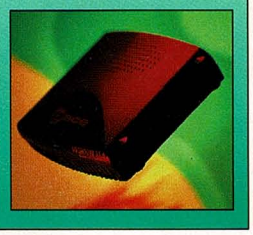

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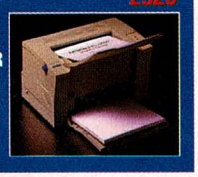

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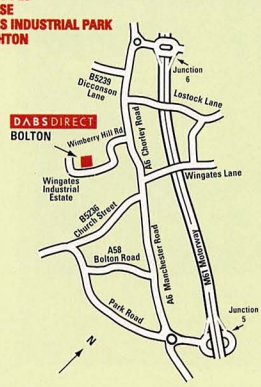

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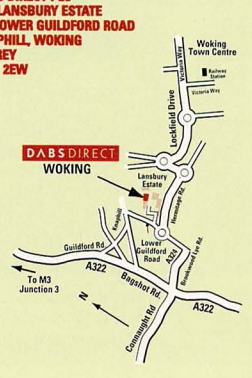

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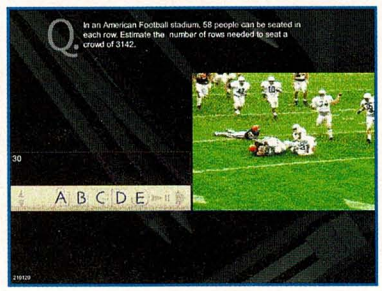
PRICE	£19.99	**ON SALE**	Now	**CONTACT**	Acacia Interactive on 01730 268463	**WEB SITE**	http://www.acacia.co.uk/
MAC	**Processor:** 68030 • **RAM:** 8Mb	**POWERMAC**	**Processor:** any • **RAM:** 8Mb	**REQUIRES**	**System:** 7.1 • **Screen:** 640 x 480 • **Colours:** 256 •		
Extras: 2x speed CD-ROM drive • **Age range:** 14 to 16, or any GCSE student							

Mathematics

This new revision aid aims to help teenagers through one of life's most painful periods – the dreaded GCSE Maths exams. Can it stop those furrowed brows?


Q.
In an American Football stadium, 58 people can be seated in each row. Estimate the number of rows needed to seat a crowd of 3142.
30
A B C D E

A video clip of American football action accompanies a question about how many rows of seats are required in a stadium.

Precisely 98.3% of teenagers are troublesome. This is a documented fact. There's no such thing as a well-balanced teenager. But why is it so?

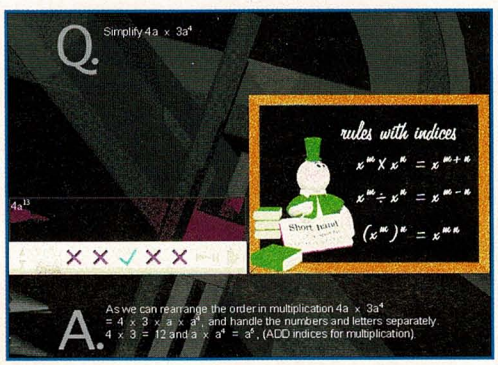
Some are blaming the so-called "alcopops", while others will refer to both the falling price of cider and the marketing strategies of major tobacco companies. Catching the majority of the blame for adolescent misbehaviour, though, are their hormones. Johnny crashed the car. Hormones. Susan was caught shoplifting. Hormones. David only wears black. Hormones.

However, Acacia's *Mathematics* CD (from the Acacia *Revise* series) might make you question the hormonal explanation. Based on the rather thorny topic of GCSE Maths exams, Acacia's CD is full of the kinds of questions today's teenagers have to answer correctly if they want to get a job, go on and do A-levels, or basically just get on in life. As though dealing with the hormones wasn't enough, pupils taking their GCSE exams have to come to grips with such things as interquartile ranges, negative integers, significant figures and orders of symmetry. No wonder alcoholic lemonade sells so well.

The first thing to understand about *Mathematics* is that it won't actually teach students the maths they'll need to pass their exams – this is no multimedia classroom effort with a bunny for teacher and a virtual visit to the realm of numbers.

Instead, it's a revision disc that gives you the opportunity to create a huge array of mock exams covering all parts of the maths syllabus.

At the heart of the program lies a compilation of over 1,500 questions from the main areas covered under the 1997 and 1998 GCSE exams. These include: Numbers; Algebra; Shape, Space and Measures; and Handling Data. You (or your child) can create tests for the six major English examination boards, as well as for the Scottish Standard Grade and the Irish Junior Certificate.


Q.
Simplify 4a x 3a⁴
rules with indices
Short hand
A.
As we can rearrange the order in multiplication 4a x 3a⁴ = 4 x 3 x a x a⁴, and handle the numbers and letters separately. 4 x 3 = 12 and a x a⁴ = a⁵, (ADD indices for multiplication)

No image is better suited to a question on indices (exponents) than a rotund leprechaun.

While the CD's presentation might be drab and utilitarian, it does what it sets out to do quite well, and you can easily customise the tests to be taken, too. You might, for instance, want to make a test with 15 random questions from each of the four major sections of the curriculum. On the other hand, if you're tailoring the test for someone who's having difficulties with probability and quadratic equations, then you can set a test up specifically for that person by choosing questions only from these parts of the syllabus. You can even make a focused test of this type more interesting by throwing in the odd problem on fractions and decimals or series and graphs for good measure – *Mathematics* is very flexible in this way.

Similarly, if you need to know which areas your child is particularly good or bad at, there is a performance screen that gives a breakdown of how many questions they have attempted and how many they've answered correctly in each part of the syllabus. To judge your child's progress you can look at further screens that only take into account the last 100 questions or the last 50 answered. Checking these screens might also be useful if students are configuring their own tests because you will easily be able to see which areas of the curriculum they are avoiding.

Guarantee

Acacia Interactive is so confident in its *Mathematics* CD that it has included a money-back guarantee for anyone who buys the CD, yet fails the maths GCSE.

Board stupid!

The six English examination boards this CD caters to are the ULEAC, NEAB, MEG, SEG, WJEG and NICCEA.

Added interest

To make things look a little bit more interesting, the CD does include video clips, animations and photographs, plus all kinds of graphs and diagrams that are relevant to the questions. This just serves to add colour to what would otherwise make for very dull testing. Wisely, no music has been included.

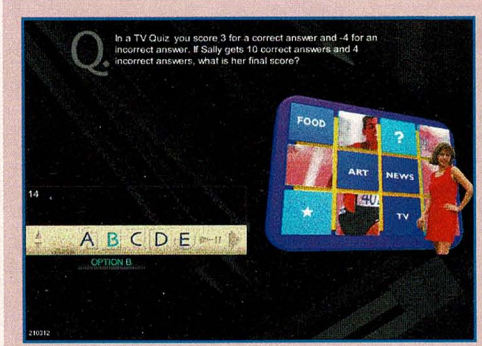
So, you might think that there isn't anything particularly innovative about this CD – after all, it's just a huge list of questions that can be compiled into various maths tests. It is, however, simple to use and effective at what it sets out to do. For maths students who really want to pass their GCSEs, it beats alcopops hands down. **JOSEF MORRELL**

Mathematics

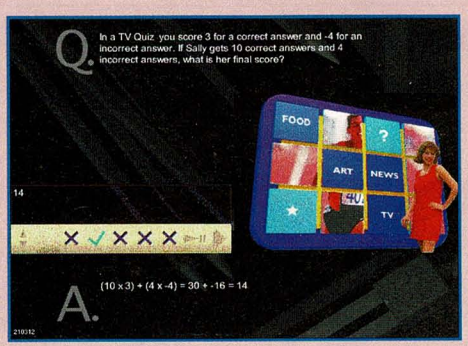
Solid. It sets out to be a revision aid and does very well, but otherwise it's not particularly innovative or interesting.

MF rating 78%

Question & answer


Q.
In a TV Quiz you score 3 for a correct answer and -4 for an incorrect answer. If Sally gets 10 correct answers and 4 incorrect answers, what is her final score?
FOOD
ART
NEWS
TV
A B C D E

All the questions are multiple choice and you have to answer each one correctly before you can move on to the next.


Q.
In a TV Quiz you score 3 for a correct answer and -4 for an incorrect answer. If Sally gets 10 correct answers and 4 incorrect answers, what is her final score?
FOOD
ART
NEWS
TV
A.
(10 x 3) + (4 x -4) = 30 + -16 = 14

When you click the correct answer, an explanation of the solution, with all the working out, appears at the bottom of the screen.

PRICE	£29.95	**ON SALE**	Now	**CONTACT**	Iona Software on 0181 296 9454	**WEB SITE**	http://indigo.ie/~ionasoft/home.html
MAC	**Processor:** 68030 • **RAM:** 8Mb	**POWERMAC**	**Processor:** any • **RAM:** 8Mb	**REQUIRES**	**System:** 7.1 • **Screen:** 640 x 480 • **Colours:** 256 •		
Extras: 2x speed CD-ROM drive • **Age range:** four to eight							

Mighty Maths: Carnival Countdown

Clowns and various talking animals all aim to help young children get started with mathematics in this fun-filled figure-fest from Iona.

Welcome to the carnival. It's bright, brash, colourful and fun, and there are no annoying gypsies around offering to read your fortune.

What starts off as a game of sorting cars by colour will one day lead children to learning about intersecting sets and the relative values of numbers.

Young children want to learn, oh yes. That's what child psychologists will tell you. What they forget to mention, however, is that children don't really want to learn quite as much as they want to eat crisps, watch *Toy Story* and play *Crash Bandicoot* on the PlayStation. Hence, for many years the publishers of educational software have pledged themselves to the task of making learning fun.

With *Carnival Countdown* from the *Mighty Maths* series, Iona Software stands up well to the challenge. And, while it can't compete with Buzz Lightyear's vacant grin or the antics of Crash the top-spinning antipodean varmint, it will certainly help young children get a firm grounding in certain areas of basic maths, including geometry, sorting, addition, subtraction, multiplication and division. The "Carnival" of the title has five main attractions, each of which presents different challenges and is hosted by a cute little cartoon critter.

Most interesting, perhaps, is Annie Armadillo's "Pattern Block Roundup". Annie, who looks and talks like Tammy Wynette, challenges your children to select and manipulate shapes to match patterns she's created. As the game progresses, she introduces fractions and problems, where the objective is to build something using as many or as few as possible of the basic geometric shapes provided. As in the other sections, there are 26 levels of difficulty, so if your children can already handle mere shape-matching, you can move them up to questions they'll find more challenging.

Bubble counting

Elsewhere, Exact Eddie, a nerdy-looking weasel, hosts the Bubble Band show. Here, your kids are taught how to count in ones, tens and hundreds, although the show moves on quickly to introduce addition and subtraction. There are three members of the band: one blows bubbles representing ones, another blows tens while the third blows hundreds. Fittingly, the subtraction questions feature the chance to burst bubbles with a dart. "You're bubble-rific," Eddie will from time to time exclaim, on receipt of a correct answer.

Bumper cars are always a favourite at carnivals, and with Carnival Cars they make their appearance in a game that tests sorting skills. At first, Alison the Elephant asks children to sort cars into two or three groups by colour. Later on, children must separate them according to shape, number, species of driver (whales, giraffes and bears are all in there), and so on. Concepts such as intersecting sets, odd and even numbers and "greater-than" or "less-than" are all introduced.

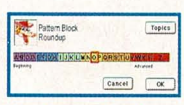
Similar-style problems are on offer when Odd Otter and Even Otter take the stage at the scales exhibition. They start by teaching ones, tens and hundreds as Exact Eddie does, but then move on to equal-to, greater-than and less-than. They cover the same ground in a different way, counting laughs instead of bubbles and using scales rather than a system of sorting.

Although the fat purple thing on the right might look like a California Raisin, to these otters it represents one hundred laughs. We'll certainly go along with that...

The fifth and final attraction is the Clown Circus. Here, a lion with a silly accent conducts an exercise in multiplication and division. The game is less well thought out than the others, with the tasks involved in both operations being identical. Still, you do get to paint the clowns.

Carnival Countdown isn't of the highest quality, but it sells at a good price. The graphics, though not whizzy, are largely colourful and amusing, while plenty of voice samples give encouragement. Some of the attractions are made open-ended, too, so that once all the questions are finished, your children can set up their own challenges. While it's true that no educational software will ever detract from the appeal of movies and video games, this CD at least presents some light-hearted learning challenges for young children.

JOSEF MORRELL



The longevity of each activity is ensured by 26 levels of difficulty.

They won't hit home like the Spice Girls or appear semi-naked in the *News of the World* – the Bubble Band is squeaky clean.

Dividing and multiplying the clowns is probably the least fun among the numbers games in *Carnival Countdown*.

Carnival Countdown

Varied mathematical problems that your children will learn from, dressed up in the guise of fun and games. Good stuff.

MF rating 75%

PRICE	£19.95	**ON SALE**	Now	**CONTACT**	Iona Software on 0181 296 9454	**WEB SITE**	http://indigo.ie/~ionasoft/home.html
MAC	**Processor:** 68040 • **RAM:** 8Mb	**POWERMAC**	**Processor:** any • **RAM:** 8Mb	**REQUIRES**	**System:** 7.1 • **HD space:** 30Mb • **Screen:** 640 x 480 • **Colours:** 256 • **Extras:** CD-ROM drive • **Age range:** 8 to 12		

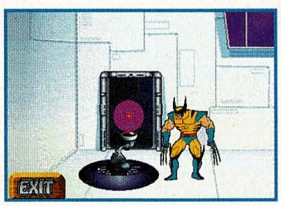
Amazing Maths

The Hobgoblin's attacking with a sum, while the Toad is hurling fractions about. It can only be a job for the heroes from Marvel.

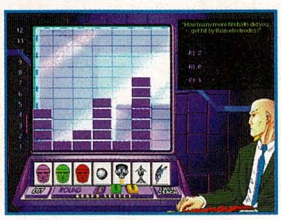
In an attempt to appeal to slightly older children, *Amazing Maths* has drafted in some superheroes and villains to liven things up.

This CD presents children with four maths-based games involving four Marvel superheroes. Spider-Man must mount an assault against Hobgoblin by solving addition, subtraction, multiplication and division problems, while She-Hulk has to fend off an alien invasion by getting to grips with multiples, factors and equivalent fractions. Drifting around in space in an Asteroids-based game, Iron Man must defeat Modok by identifying and shooting down certain basic geometric shapes. Finally, Wolverine (of the X-Men) must impress Professor X by slashing targets in the training room, then graphing and interpreting his results.

Using superheroes to add interest is a good ploy, but the problems are too repetitive to keep the children's interest for long. Although things do slowly get more difficult, we found that the same questions kept cropping up three or four times in one session. Even the music is tedious, and the quality of the gameplay low. *Amazing Maths* might be slightly cheaper than other CDs, but it lacks long-term appeal. **JOSEF MORRELL**



First, you must make Wolverine slash at targets and dodge hazards for two minutes...



... then, just like in the comic book, he has to sit down and make a graph of his results.

She-Hulk must sort out her multiples and factors if she expects to rid the world of the flying toadman menace.

Amazing Maths

The attraction of controlling superheroes soon buckles under the tedium of the four repetitive games presented within.

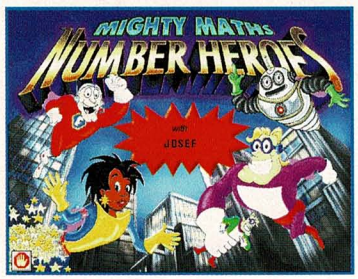
MF rating 61%

PRICE	£29.95	**ON SALE**	Now	**CONTACT**	Iona Software on 0181 296 9454	**WEB SITE**	http://indigo.ie/~ionasoft/home.html
MAC	**Processor:** 68030 • **RAM:** 8Mb	**POWERMAC**	**Processor:** any • **RAM:** 8Mb	**REQUIRES**	**System:** 7.1 • **HD space:** no hard disk space • **Screen:** 640 x 480 • **Colours:** 256 • **Extras:** 2x speed CD-ROM drive • **Age range:** 8 to 12		

Mighty Maths Number Heroes

More heroes, but here the emphasis is more on the maths problems than who's inside the costumes...

Like *Amazing Maths, Number Heroes* tries to entice young mathematicians with funny characters in garish lycra bodysuits. The difference is that the heroes here are of a more tongue-in-cheek variety. It's this spoofing humour that might just make *Number Heroes* more effective than the serious "life-on-Earth-is-threatened" stance taken by *Amazing Maths*.



Working anti-clockwise from the top left are: Fraction Man, Star Brilliant, Handsome Chance and the Geobot. Not famous but fun nonetheless.

First there's Fraction Man. His task is to make fireworks using varying amounts of coloured flares. If he needs a firework that's two-fifths red, your children have to work out how to create it. Meanwhile, Star Brilliant hosts a game-show something like *Jeopardy*, where points are won by doing some fairly complex calculations.

Meanwhile, in his factory, Handsome Chance is manufacturing action figures of himself, and, using a probability machine, children can help him work out the chances of producing action men wearing suits of different colours. Finally, there's the Geobot, who has a geometry emergency that your children can help with by handling problems involving shapes, perimeter measurements and calculating area.

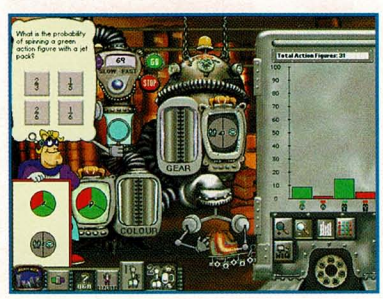
While the silliness of the characters might put off those at the top end of the age range (8-to-12), the mathematics involved is far more relevant to what they're likely to be working on in school than is the case with *Amazing Maths*. With a good range of difficulty levels for each of the topics, it also has the upper hand when it comes to the longevity stakes.

It just goes to show, you don't need to draft in big-name comic-book talent to make a maths CD effective. It's far better to concentrate on the maths that is going to be taught than pay out licence fees to use images of Spidey and Wolverine. This CD might cost £10 more than *Amazing Maths*, but it will prove far more useful in the long run. **JOSEF MORRELL**

Number Heroes

This helps build children's understanding of geometry, probability and fractions.

MF rating 76%



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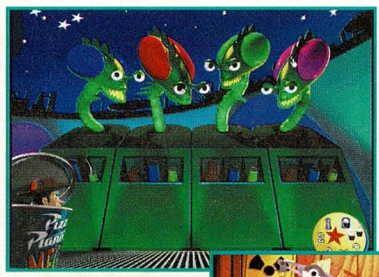
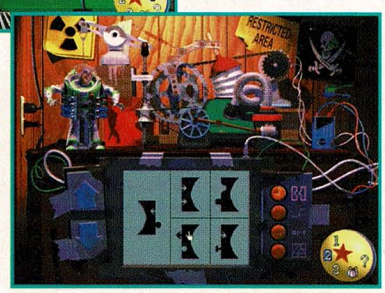


Visit some hostile aliens with Buzz and Woody and play an educational game of "Simon" – a pattern-remembering game where you reproduce a pile of coloured puke. Educational? Possibly. Fun? Yes.



This example is among the simplest of the extensive puzzles. By fitting shapes such as these, and a series of less obvious pattern-following and letter-matching exercises, you free Buzz.

The first licensed *Toy Story* CD-ROM, *Animated Storybook*, was a runaway hit – commercially speaking at least – with ChartTrack branding it the "number one-selling edutainment title in the UK last Christmas". So here comes the latest Pixar-produced *Toy Story* product, and the third of Disney Interactive's *Activity Center* releases (after *The Lion King* and *Pocahontas*), *Toy Story Activity Center*.

Disney's aim here is to "combine the humour of favourite *Toy Story* characters with eight mind-challenging activities", targeting five-year-olds and up. Along with word recognition and vocabulary skills, the remit is to help kids extend their "creative, strategic and numerical skills". It holds to the slick production values of its forebears, and, sure enough, contains eight activities, but can these contrived games really aid learning?

Well, with two young helpers, we delved into the CD to find out. You take on the role of cowboy Woody's nameless deputy, and he leads you through a friendly introduction and into the games beyond. Unfortunately, before you can get at any of the interactivity (apart from clicking on your name to confirm that, yes, you are still the returning deputy), you must sit through the same beautifully-rendered conversation between Woody and his toy-mates. This doesn't bode well for the level of interactivity, but fortunately this does pick up.

The action takes place in three main areas, each instantly recognisable from the film: nice Andy's bedroom, nasty Sid's house and the Pizza Planet restaurant. Within the first two areas there are three games to puzzle over, and in Pizza Planet (where your host is the ever-ebullient Buzz), there are two games and a chance to watch videos with some aliens. All the clips are from *Toy Story* itself – and since we've all seen it, wouldn't the disc space have been better devoted to another game or two? Our young players didn't come back here for a third time.

Once you've learned to add up to 99 in piggy-bank Hamm's game the fun soon starts to wear off.

The games themselves vary in the areas of cognitive activity they plug into, and in the amounts of effort they require to complete. They vary in quality, too. Of the four games pictured, three (marble-art, soldiers board game and puking alien tunes) are impressive, encouraging creative use of shapes and colours, spatial awareness and concentration. Only one of the four, the number-based cards game, is short-lived – once you've been through the adding and subtracting procedure to make the cards' values total 99 there's no variety in presentation or reward to make you want to do it again.

Of the remaining four games, a 3D puzzle to connect Buzz's spaceship fuel pipes is brain-testing, and the 2D shapes and letters puzzles are fun and a healthy distraction even for adults. The music and sample-mixing game on Sid's stereo adds variety (although the limited range of samples does make it short-lived), but the game where you bolt together pieces of different toys to make one huge creation is only one shade above utter nonsense.

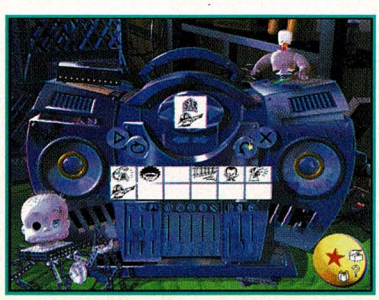
So, four smashing games, two okay ones and two duff turkeys. Our helpers found the best games challenging enough to return to again and again, and would have enjoyed them even without the *Toy Story* brand. The animation and production values are superb, and the educational content of the better activities matches this well enough to carry the weaker games. A worthwhile product for youngsters – it's a shame there isn't more of it. **JOSSE BILSON**

Slinky's isometric 3D-viewed soldiers board game is basically *Connect 4* from a different angle. There are animations and options, but the nature of the game is educational, if not too original.

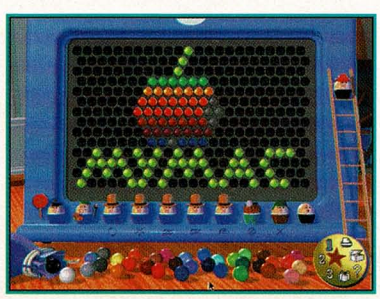
Toy Story Activity Center

Beautiful, fun and educational too – a few more games might have made this a classic.

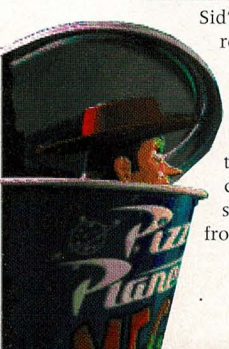
MF rating 85%



Unfortunately the music-making activity is not as intuitive as you'd hope, leading you to random button pressing.



Dinosaur Rex's marble-art game may not measure up to *Photoshop* and the like, but it's fun nevertheless.



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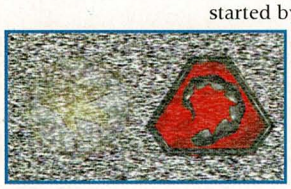
Command and Conquer

This is no ordinary war game – whether you're into shoot-'em-ups, strategy or adventure games, this aims to satisfy all tastes. James Ashton investigates.

No matter how careful you are, enemy troops will still find a way to sneak through your defences and attack your base.

Over the decades, war has proved a popular pastime. What with all the death, destruction and unfortunate films that it leaves sadly trailing in its wake, for most people war's continued popularity might seem a little puzzling. However, the truth is that wars are started by "the people in charge" and, for "the people in charge", war remains enormous fun. If they win, they get the glory and loads of new toys, and if they lose, well, at least they got to dress up in a general's uniform and shout at people for a couple of years. So, as long as you're one of "the people in charge", war is fun.



At the start of the game, you have to choose which side you want to play on, GDI or Nod (good or evil). There are different missions for each.

Command and Conquer is a strategy war game with the advantage that you don't have to climb the greasy pole of political power to participate. And let's get one thing crystal clear from the start: no matter what type of game you normally like to play – be it arcade shoot-'em-up, adventure or strategy – you'll have played none finer than *Command and Conquer*. To put the matter simply, it approaches perfection.

But how can one game cross three rigidly defined game styles and still collect the bouquets at the end of it all? Initially, *Command and Conquer* looks like just another dry war sim: you can play either side in "the encounter" and the overall aim is to command your forces to a complete territorial victory.

However, the sheer simplicity of its structure is where *Command and Conquer* improves on the – let's be honest – slightly anoraky flavour of most strategy games. Instead of having to cope with too much reality, the game simplifies key elements. Thus, the management of a million wartime resources is refined down to the management of a continual supply of Tiberium – a kind of energy-cum-mineral resource super crystal that's taken to growing all over the planet.

Similarly, as long as you have the energy and cash (from Tiberium, what else?), reinforcements can simply be "grown". None of that tricky recruitment and motivation to cope with, then.

You only need to have the control panel on screen when you want to build things – otherwise it just gets in the way. Control everything else with the mouse.

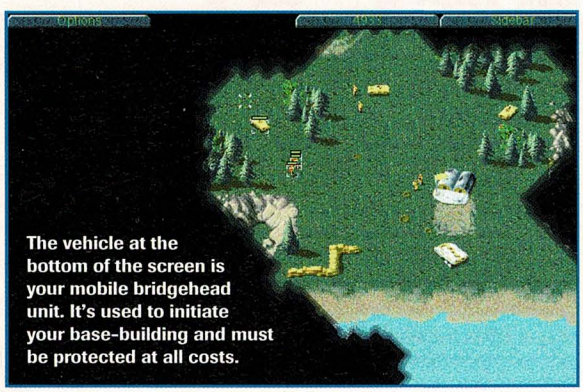
Keeping it simple

You might think that simplification like this would ruin matters, destroying the sense of reality that is so vital to the overall enjoyment of the game. However, in the niche that *Command and Conquer* makes for itself, a vital new component is added: arcade excitement. It's hard to imagine the frenetic pace of *Command and Conquer* simply by looking at the pictures shown here. The truth, though, is that the real-time nature of the game (no turn-based movements here) and the fantastic, worryingly-human level of intelligence in your computer opponent mean that you'll barely have a moment to look up from your screen. Constant tactical decisions need to be taken, logistical problems overcome, second-guesses on enemy strategies made, all under the umbrella of the main mission objective, in the face of extreme enemy aggression and executed *solely* with mouse clicks. Standing in a room of people playing *Command and Conquer* sounds like the novice room at Morse Code school.

GDI vs. NOD

Strategy? Yes. Arcade? Yes. Adventure? Well, just about. The final delight of *Command and Conquer* is the ever-changing mission scenarios and the merely decorative but rather fun FMV (full-motion video) films in between.

You join the game as the balance of power and global territory is finely poised between the (good) Global



The vehicle at the bottom of the screen is your mobile bridgehead unit. It's used to initiate your base-building and must be protected at all costs.

As the missions become more difficult and the computer learns your tactics, this can be an all-too-frequent message.

Red countries are controlled by the Brotherhood, orange by the GDI. You start the game with things finely balanced.

Field of dreams

The graphics in *Command and Conquer* are perhaps best described as "functional". Because the screen enables you to view a reasonable proportion of the battlefield in one go, your troops, vehicles and buildings have to remain fairly small, restricting the need for detailed movement animation. This is never a problem, however, as most missions have such a frenetic pace that you never get much of a chance to admire the scenery – as well as commanding at least three simultaneous and separate enemy engagements, you have to manage your Tiberium harvesting, energy plant and troop reinforcements. A typical battlefield looks and works something like this…

Your Troops: Clicking on them selects them; clicking on a location sends them trundling off. Different types of troops have different fighting characteristics but their AI (artificial intelligence) is universally good: if enemy units come into range, they'll attack automatically.

Uncharted Territory: Until you've sent forces there, you don't know what lurks in these areas. More often than not, it will be trouble.

Tiberium Harvester: Part of the Tiberium Processing Plant, this vehicle is sent out to mow the fields of Tiberium. Make sure you protect it from enemy attack.

Ground Vehicles: Usually part of your initial invasion force, these vehicles can come in several varieties. Vehicles are particularly useful for exploring uncharted territory in the quickest possible time.

Enemy Outpost: These can range from gun emplacements to advance warning radar sites. It's a good idea to destroy them before venturing deeper into enemy territory.

Enemy Base: Similar to yours, your enemies' base is dependent on Tiberium. Capturing the base (send in one of your engineers once a safe path has been cleared) or depriving it of Tiberium (destroy the harvester or capture the Tiberium field) will prevent your enemy creating reinforcements or organising properly.

Enemy Troops: The opposition is very crafty. Its set-up is the same as yours – a Tiberium plant fuels its resistance and counter-attacks – and attacking its base or harvester will provoke a furious response.

Tiberium Plant and Silos: Tiberium fuels your war. If you run out, you won't be able to generate reinforcements or repair damaged infrastructure. The nearer your Tiberium Processor Plant to a supply of Tiberium, the more efficient it will be. However, siting it badly leaves it open to attack.

Barracks: These don't just house but "manufacture" soldiers. Generate reinforcements here.

Communications Base: Expensive to build and vulnerable to attack, the communications base provides an overall map of the battlefield. It's essential for calling in air-strikes.

Manufacturing Plant: This comes in your initial invasion kit and is used to build infrastructure such as the Energy Plant, Barracks and Tiberium Silos.

Defence Initiative (GDI – a United Nations without Boutros Boutros Ghali) and the (bad) Brotherhood of Nod (dodgily-named cult/terrorist outfit).

Your task, in a pleasant slice of moral ambiguity, is to take *either* side to final victory. Battles take place for individual geographic areas, but rather than having each as a set-piece confrontation, every round has a subtly different mission objective. These can range from full-blown battles to more subtle seek-and-destroy missions and covert operations. More importantly, they all tie in to the developing game story and your secondary mission is to find out just what the hell is really going on.

Command and Conquer is the same mix of ever-increasing tactical complexity and childish operational ease that ensures that games such as Bridge, Chess, Backgammon and Darts (okay, perhaps not Darts) will never die. If you buy only one more computer game in the rest of your life, this is the one that you should get your cash out for. **MF**

Command & Conquer

The best game available on the Mac. No matter what type of game you usually play, this will be your best buy of 1997.

Graphics	89%
Sound	92%
Gameplay	97%

MF rating 95%

Mission structures vary. Some are just a case of destroying or capturing all enemy emplacements, but others can be a more complex or subtle mix of objectives.

And there's more...

You can play *Command and Conquer* either as a single-player or multi-player game. Up to four players can participate at once, and all the subtleties of the single-player game are present, plus it's better (and more vindictive) than multi-player *Doom 2*. As well as being able to play with up to four players on the Net, *Command and Conquer* will run from Mac-to-Mac or Mac-to-PC. Impressive stuff. Never mind all that World Wide Web and e-mail gubbins, get *Command and Conquer* and an Internet connection and you'll never see the sun again.

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Gord@k

A secret cyber-agent on a search-and-destroy mission, you're the CS Corporation's last hope to eradicate the deadly computer virus Gord@k. Is it as exciting as it sounds?

Through the Superview machine, you'll catch glimpses of future events and places on your adventure. A gyrocopter ride and a maze behind The Great Door (below left), are among them. Get the dollar from Wong's wallet and change it for tokens at the machine by the tram before returning to the Superview.

The maze that lies behind The Great Door shown by the Superview is *Doom*-inspired, and can soon get confusing. There are secret doors behind which you can top up with cosmic energy before reaching the Communication Room for a puzzle game.

On sale...

There's no official UK distributor of *Gord@k* at the moment, so you're not likely to find it in the shops, but do check with mail order retailers who carry imports – many of them advertise in MACFORMAT.

Your mission: to capture a lethal computer virus. Your remit: to navigate your way through a very hazardous computer environment. Already, three agents are missing, presumed dead. Now it's your turn to try and overpower the deadly Gord@k.

You start out on this futuristic cyber-adventure by booting up a computer and logging in as a secret agent, and you then receive an e-mail which outlines your mission. This is quickly followed by a second message, announced by a Russian-sounding voice (arriving after a convincingly sluggish download wait). After this, more controls appear, and you receive access to files on the previous CSC agents who unsuccessfully attempted your mission. It all sounds rather important yet it doesn't look at all flash and doesn't immediately set your pulse racing either.

Settling into your mission, you come across a memo from the journal of Lewis Laceter, a high-ranking employee at the powerful animation firm CelGen and creator of the eponymous Gord@k. Laceter's unofficial work on the software-actor ended in disaster when it broke out of the controlled test environment. Within minutes it became a virus, spreading through the company's computer system.

Using each tool on the environment is the way to proceed, though logic isn't always in evidence. Using a knife on some steps to reveal a magnifying glass? Hmm.

The memo offers clues to the nature of the android-soldier character-chip he developed: "I combined personality profiles from an artist, a mathematician and a game show host to establish the broadest possible character... I cannot stress strongly enough the danger that Gord@k represents. It is highly intelligent, unpredictable and remorseless."

Once you've taken the leap into the adventure proper, you enter a beautifully drawn and detailed 3D world. Here, there is a path to follow which will lead you to Gord@k and its new lair. It's beautiful – but it isn't real, so nothing will necessarily behave as you expect.

To navigate your way around this world, click on hotspots until you find areas of interest, then pick up objects and experiment. The graphics and all-round presentation throughout the game are superb, and QuickTime movie files are put to good use, with 3D environments spinning around on their axes, enabling you to view the whole picture.

You'll also come across tokens to feed the Superview machine. These are essential, as the machine enables you to view future events, thus furthering your chances of completing your mission.

However, there is a major problem with *Gord@k:* throughout your mission, there's never quite enough in the way of interactivity, so there's limited scope for adventure. You can click and click again, but objects and backgrounds refuse to respond. Soon you're left with a feeling of being shepherded towards a goal rather than searching for clues to fulfil your mission. The twin ramifications of this are that it won't take you long to complete and, once you have done it, there's little incentive to do it all again.

Explore behind the beautiful gazebo and you'll find something useful. Why would it be there if it wasn't for storing keys?

The second problem with this game is that the spooky, moody music and the dirty, *Bladerunner*-esque interface doesn't sit very well with other elements such as some very pretty scenes and the almost comical animations of sunglasses and a digital camera, or the silly squeaks and cymbal-crashes that signify the discovery or use of certain objects. It would have worked better if the game's producer had decided early on whether it was intended to be deadly serious or tongue-in-cheek.

But there are fun elements within the adventure. The tools you collect are a happy mixture of those belonging to an old-fashioned sleuth and those of a computer buff: you're equipped with a magnifying glass and flick-knife in a world accessed only through a computer interface. The tram-ride and gyrocopter put you in mind of an all-action James Bond movie (minus the schmaltz); and some of the puzzles are reminiscent of classic Mac adventures such as *Alone in the Dark*. But the bottom line here is that, despite its looks, the adventure within this game simply isn't as engaging or as exciting as it should be.

JOSSE BILSON

Gord@k

An interesting (if not entirely original) idea, beautifully presented, but eventually let down by inadequate interactivity.

Graphics	**85%**
Sound	**65%**
Gameplay	**50%**

MF rating 67%

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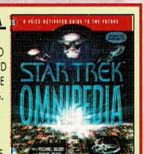

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Leisure Suit Larry: Love for Sail

Board the PMS Bouncy for a crude cruise across a sea of innuendo, stopping at all smutty ports on the way. Life jackets at the ready...

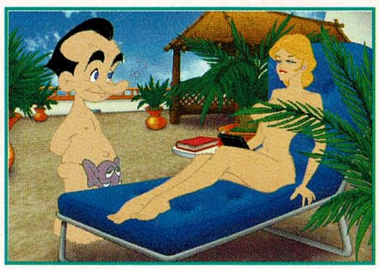
What images do beavers conjure up in your mind? If you're thinking about cute furry animals frolicking in their outdoor swimming pools, then this game just ain't for you. If, on the other hand, you sniggered and thought about the dog-eared book hidden under your bed, then prepare yourself for a treat...

"Say, lady, you remind me of my mother. But you've probably heard that chat-up line a thousand times." *Leisure Suit Larry* is nothing if not tiresome...

Love for Sail is the seventh game in the *Leisure Suit Larry* series, and if you've played any of the forerunners, such as *Shape up or Slip Out*, you'll know just what your senses are in for. It's a traditional graphical adventure game, in which you control a character who wanders about exploring the game world. You'll find enough artefacts to fill a curiosity shop, the idea being to find the correct use for a particular item, so that you can overcome the obstacles that rear up (wink, wink).

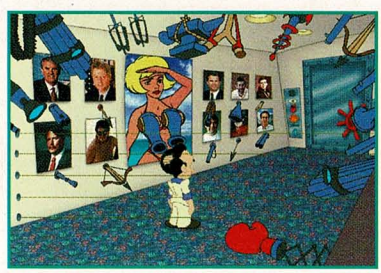
If this sounds like *Myst* to you, then you should appreciate one important difference – Leisure Suit Larry is a very sad little character who is desperate for a sexual encounter of *any* description. So desperate, in fact, that he's prepared to appear in this smut-laden game. To give you an idea of the game's flavour, one puzzle involves asking the barman to give you a gigantic erection. You see, the joke is that it's the name of a cocktail. Hours of belly laughs. And if you survive that wild hilarity, wait until the game's revelation that there was some German plane-maker bloke who was called Fokker (hmm, that sounds like...). The jokes on this subject continue for five minutes (yawn, yawn).

As the game's pun of a title suggests, all the action takes place on board a luxury liner. You soon learn that your ultimate goal is to win a series of challenges in the ship's competition. The reward is to spend the rest of the cruise sleeping with the voluptuous female Captain Thygh (ooer, sounds like...). As you go about on your noble quest, you'll need to find a host of humorous items, including sexual lubricant, toilet paper, and beaver cheese (ho ho, he said beaver again). You'll also come across a variety of characters, the majority of whom are semi-naked women with large breasts (cor, that's a bit rude). These characters will give you clues and items that will help you complete the game. Oh yes, and you get to do naughty grown-up things with most of them.



"What's a nice girl like you do doing in a smutty game like this?" This gives you a taster of the "style" of *Love for Sail*...

Wow! Your desk is so full of ripe melons and bendy bananas that there's almost no room left for innuendo. Almost...

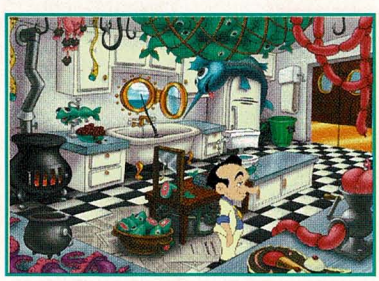


The entrance to the ship's staff room gives a positively unwelcoming sensation to the casual visitor. And not by accident.

Carry on sailing

Strictly from a gaming perspective, *Love for Sail* is an adequate game, although there's nothing new or inventive that we haven't seen in dozens of similar games (well, apart from a scratch'n'sniff card, which you really don't want to know about). Control involves simple one-handed pointing and clicking with your mouse (great, that means one hand is free...). In keeping with the "style", the mouse pointer is a condom, which unrolls when placed over something of interest. However, it's cumbersome and all too easy to miss that small item of interest with your condom (giggle).

Performance is disappointing, too. Even though we gave the game far more memory than it requires, it still resorted to accessing the CD at every possible opportunity. The animation also started to slow down after we'd played for an hour, which means you have to keep quitting and relaunching.



Fortunately Larry doesn't play the role of a hygiene inspector. Unfortunately you must prepare a prize-winning meal in here.

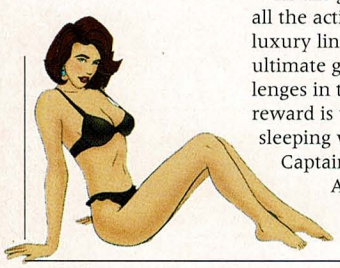
Titter ye not

These points aside, the main criticism of *Love for Sail* is its so-called sense of humour. If it were a bawdy, adult, sexual comedy with liberal nudity, we wouldn't mind. Unfortunately, this game makes the *Police Academy* films look like subtle observational comedies on the vagaries of human existence. You'll hear more incisive jokes in a school playground.

Worse still, despite an abundance of busty nubile girls, the regular game doesn't contain anything as wildly naughty as a nipple (although there are several secret Easter eggs which do reveal more). You can't help but get the distinct feeling that it was created by a group of sexually retarded men who have never actually mustered the courage to talk to a real girl. Despite a 17-year-old age limit on the box, it'll be played exclusively by people under that age. **DEREK SMITH**

Die

In *Love for Sail* you can't get inextricably stuck or die. On the downside, it's still possible to be totally baffled by a puzzle.



Love for Sail

A fairly enjoyable game that is smothered in pitifully weak double-entendres and innuendos (hey, that sounds rude).

Graphics	**70%**
Sound	**75%**
Gameplay	**70%**
MF rating	**63%**

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Symbol Guide

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* = Not yet released - **please call for availability or check web pages**
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SHAREWARE CENTRAL

Now that the sun is shining and the bees are stinging, it's time to get out in the open air and take a picnic in Sharewareland. Brian Smith packs his lunch and applies his sunscreen...

ON THE CD

Try out all of these programs on our Cover CD.

Welcome to this month's review of the pick of the shareware bunch. Was it just last issue that we brought you our selection of the Top 50 shareware programs around? Well, time moves on and nothing stands still for long, especially in the ever-changing world of shareware. There's new shareware released all the time, and we've hand-picked some of the best (and one of the worst) shareware programs to hit the Internet this month – it's all here, from the useful to the ridiculous.

We've got a mix of games, utilities, System enhancers and thingummybobs for you to try. In fact, if you have a go with them all, you'll be able to play a monkey, a fish and a demon, remember all those important dates, make sense of confusing e-mails and much more. What more could you want from life?

Give a game a bad name

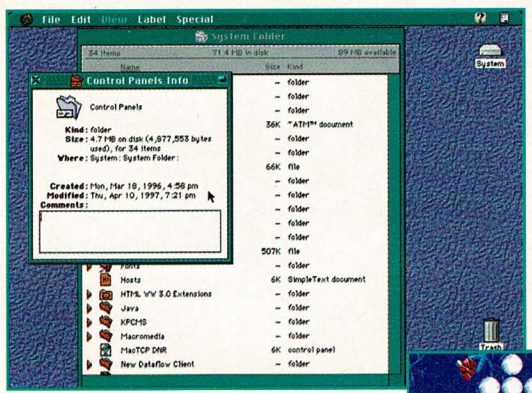
You may be a programming wizard or a *HyperCard* pro, but if your shareware hasn't got a catchy name, then who's going to notice it? Fortunately we have compiled a short list of rules to help you pick a title that's guaranteed to attract attention...

Kaleidoscope 1.0.1

Control Panel
Shareware, registration fee $20

If *Kaleidoscope* looks familiar to you, it's because it was created by the same programmer responsible for Aaron, the Extension which gives your System the Mac OS 8 look. In fact, it's basically a more configurable version of Aaron, with the original Aaron extras supplied with it. There's a replacement hard disk icon included, as well as two new System fonts, Espi Sans and Tecton.

All the elements of the interface which changed in Aaron can be altered: the colour of windows, the icons used for the window gadgets, and even the Apple menu icon. There's also a particularly nice feature where you can make the background of Finder windows use the label colour of the folder it represents. Different configurations are available as plug-ins and many extra ones are scattered liberally about the Internet – and being the kind souls that we are, we've included one of the best of these plug-ins, *MacXT v1.0*, below.



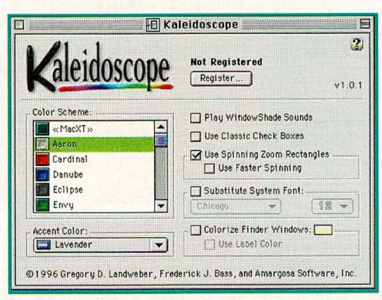
See what the next version of the operating system probably won't look like! *MacXT* is a weird hybrid of Mac OS 8 and NeXT.

Below: Blinkey the goldfish comes face-to-face with an enemy just about to "hatch" from a boulder in *Bubble Trouble*. Eek!

MacXT v1.0

Kaleidoscope plug-in
Freeware

Apple may be using some of NeXT's technologies in its revised plans for Mac OS 8 (see News, MACFORMAT 47 to 50), but the look of Aaron will remain. If you're interested in what a hybrid Mac OS and NeXT interface would look like, then you could try *MacXT*, a colour scheme plug-in for *Kaleidoscope*. It mixes and matches various System elements and even replaces the Apple menu icon with the NeXT logo. Steve Jobs would be proud.



Is your Desktop as dull as a doormat? Then dress it with *Kaleidoscope*.

Bubble Trouble

Game
Shareware, registration fee $15

Bubble Trouble is another game from Ambrosia (who's already given you *Apeiron*, *Barrack* and *Escape Velocity* among others), and it certainly lives up to Ambrosia's past releases in all respects. The game is basically the classic *Boulder Dash* set underwater.

You play Blinkey, a goldfish who is trying to escape from a maze of boulders. There are two ways you can complete a level: either kill all the enemy creatures by flattening them with a rock (it's not a

What's shareware?

In a nutshell, shareware enables you to "try before you buy" – if you intend to keep using the program, you should pay the fee. The text files that accompany the program will tell you how much it costs and where to send the money. It'll typically cost between US$5 and $40, and when you do pay, the author will often give you something in return, such as a manual or updates. Freeware means there's no fee, but you mustn't alter the program or sell it yourself.

game for the faint-hearted), or swim around and collect all of the treasure.

Blinkey is surprisingly strong too – swim into a boulder and it will roll until it reaches another rock. If you head-butt a boulder that is already next to another one, it will crumble away. You can use this tactic to escape the deadly creatures that roam the levels too, by either blocking their path or squashing them.

To collect treasure, you use similar techniques – simply roll all the rocks containing diamonds together. Although this may sound easy, it does involve some forward planning on your part, for two main reasons. First, you can only push boulders and not pull at them (after all, what are you going to grab hold of them with?), so you have to be careful not to get them trapped in the corners. Second, being a goldfish, you only have a three-second memory. So, remembering which rocks contain the diamonds may not be as easy as you may first think...

Colloque

Clock
Freeware

There must be hundreds of shareware clocks available with every feature you can think of built-in, but the question is, do you care? Probably not. I mean, do you have a burning desire to know what the time is in Hong Kong or what the current phase of the moon is? Or do you just stick with your menu bar clock? *Colloque* (pronounced "cuh-lock" – get it?) is different, and is ideal if you favour the direct approach. It actually tells you the time in plain English, so it displays "It's approaching quarter-to-five" rather than 4:43:12. Of course, you still need to set the exact time within the **Date and Time** Control Panel for it to work, but it's a nice idea. All we're waiting for now is a clock that says "It's approaching five-thirty, so it's nearly time to go home. Yippee!" Ahem...

FeatherGIF 1.7

Photoshop plug-in
Shareware, registration fee $20

FeatherGif is a nifty plug-in for *Photoshop* which creates GIF format images with feathered edges. It's a fairly simple thing to do, but can be invaluable if you need to put GIFs over different textured backgrounds for Web pages. To use it, you draw or scan an image as usual, select an area that you want to feather, and go to **FeatherGIF** (which you'll find in the **Flaming Pear** option of the **Filter** menu). It really is that simple.

FeatherGIF is a fairly specialist application (and it has a comparatively high registration fee), but if you're into building Web sites, then it's worth a look.

Need feathered GIFs for your Web page? Of course you do. *FeatherGIF* gives you a variety of effective feathering effects.

Y-Not

System Extension
Freeware

Y-Not is a simple System Extension (yes, despite the nice Control Panel icon, it is an Extension) that reverses the y-axis of your mouse. "Why would I want to do that?" you may think. Well, it can be handy if you're not used to standard flight sim controls, where moving the mouse forward makes you move down and vice-versa. This problem is particularly annoying in games like *Marathon*, where, if you're a beginner, you can end up running around gazing at your feet or up into the air!

Y-Not may not be spectacular or essential, but it's a godsend if you can't get used to those strange controls. What's more, you can always slip it into an opponent's System Folder to even up the odds. Not that *we'd* do anything like that.

AppHider 1.3

Utility
Freeware

AppHider is another simple "hack", which hides applications from the Finder. This can be useful if you have several versions of an application but want double-clicking on a document to launch a particular version. Just drag-and-drop the applications you want to disable onto the *AppHider* icon and they'll be hidden; then double-click on them to make them visible to the Finder once again.

Of course, if you're a programmer or a hacker (or just have a copy of *File Buddy*), you could do the same thing by changing the relevant application's Finder flags, file type and so on... But hey, a labour saving device is never to be sneezed at.

Bill the Demon

Game
Freeware

There aren't many Mac games where you can play an anti-hero, but this is one of them. You are Bill, a demon who is having a hard time instilling fear in his victims with such a wimpy name. Your aim is to increase Bill's street-cred by getting the Devil's signature. This involves you battling your way through the various circles of Hell and earthquake-prone bonus levels to reach your goal.

To keep Bill healthy, you need to eat the screaming souls which can be found running around the levels. When you have a fair sized Hunger Bar, you'll be able to use Bill's only form of defence, a stunning scream which will temporarily knock out an enemy.

Bill says hello to one of the inhabitants of Hell in *Bill the Demon*.

The graphics and sound effects in *Bill the Demon* are not particularly impressive, but the feel and playability of the game are great. The expression Bill makes after eating a soul is particularly satisfying... *Bill the Demon* really is a fun game to play, so long as you disregard the moral element. Which, of course, you will...

Rule 1

All shareware titles must be one word. This can't be over-emphasised. If your chosen name is actually a phrase, then run it together, a bit like this – *AReallyCoolGame*.

CADintosh 2.6

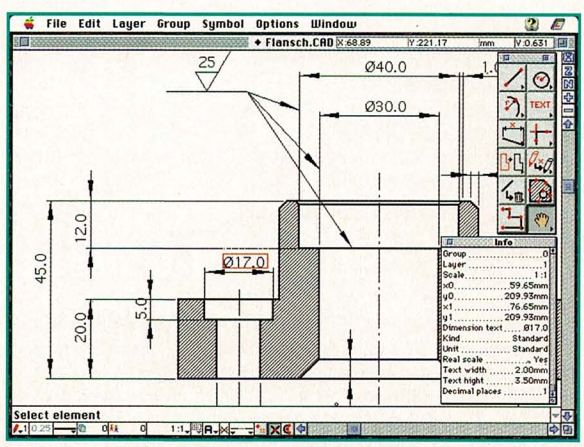
Application
Shareware, registration fee DM57,50 (Germany), DM55 (Europe – about £19.50), DM60 (Rest of world)

CADintosh has been written by a group of programmers including Thorsten Lemke, the creator of *GraphicConverter*, so you can be assured that it's well supported. It is a specialist application designed to help in the creation of technical drawings for product design and architecture. The range of tools is impressive, and full documentation is provided to help you master its functions.

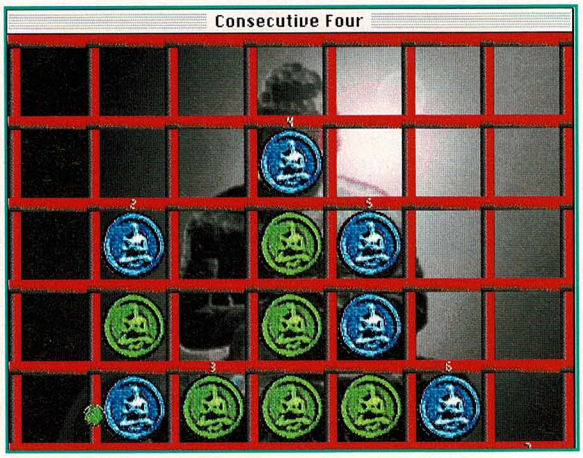
The application is very similar to other structured drawing programs such as *FreeHand*, in that you build images from lines, curves and text. The difference is that *CADintosh* boasts extra functions ➤

Rule 2

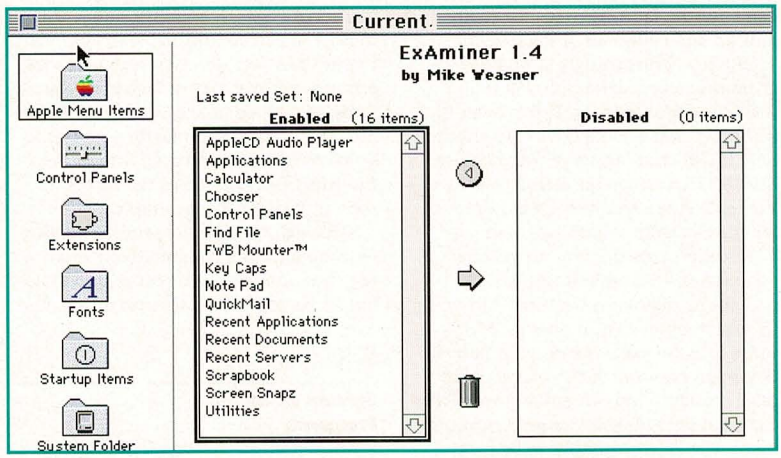
If at all possible, try to use a pun in the name. So, if your game is a retro arcade blaster, call it something like *BlastFromThePast*. With us so far?



***CADintosh* (a relative of the brilliant *GraphicConverter*) can automatically generate dimensional markings and technical symbols.**



Pit your wits against your Mac in *Consecutive Four 1.0.*



ExAminer helps you keep the contents of your System Folder in order.

Rule 3

Try to use numbers, hard-to-type symbols or unprintable characters in your title – for example: *AnÅl!en8MyHam**.

to add dimensional markings and technical drawing symbols to your plans.

The registration fee is modest in comparison to professional products' pricing, so if you're in the market for a CAD program, it's certainly worth considering.

Consecutive Four 1.0

Game
Shareware, registration fee $3

Consecutive Four 1.0 is a version of the old game *Connect Four* (remember spending hours playing that when you were tiny?), where the aim is to make a line of four counters in a grid. The only snag in this version is that you can't play against a human opponent, just your Mac.

There are two different artificially-intelligent players you can select. The first is fast and plays a well-balanced game (the computing equivalent of your older sibling who always used to beat you, no matter what). The alternative player is almost invincible, but takes a long time to calculate its moves (perhaps your mum or dad, in one of those moods where they just took games a tad too seriously...). You can also fine-tune the playing ability of each AI opponent using the **Options** menu.

It's a pity the programmer didn't include a human two-player (or multi-player) option in this game. Playing the computer AI opponents can get very boring very quickly – after all, there's no substitute for the feeling of playing against a friend and beating them over and over again...

ExAminer 1.4

Utility
Shareware, registration fee $10

After you've tried all the shareware on the MACFORMAT Cover CD, it's likely that your System Folder will be filled with lots of new Extensions and Control Panels. *ExAminer* lists all the files within your System Folders, and, in a similar way to the **Extensions Manager** Control Panel from Apple (but better in many respects), enables you to disable files and even create sets of them. As

Monkey Shines

Game
Shareware, registration fee $20

Monkey Shines **is a platform game of the old school, and I mean *old.* There's no jumping on creatures' heads to kill them here, as in *Mario.* This is more of a *Jet Set Willy* style game: run around a series of flip-screen locations collecting keys and avoiding baddies. It has been updated with some high-quality 3D-raytraced graphics and music, but the basics are the same. You play the eponymous monkey, and your aim is to collect all the red keys on each level. Achieve this goal and an exit is revealed. Collect all the blue keys and you get access to an extra, secret level. As in any good platform game, there are also all sorts of power-ups and bonuses to pick up.**

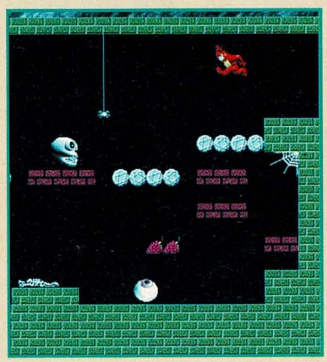
The full game has five themed levels, but the unregistered demo only allows you to access the first. Fortunately, the author has provided a level-designer, and from here you can take a sneaky-peak at the other four. It's a very buggy beta version, though, and you have to use *ResEdit* to make any changes to a level's graphics – so designing your own isn't really an option we can unreservedly recommend yet.

The levels are built from the usual selection of blocks, with conveyor belts, melting blocks and deadly bombs scattered about. The enemy creatures are fluidly animated and link in very well with the level themes – with pumpkin lanterns and gigantic vampire teeth in the "Spooked" level and so on.

So what's the verdict? It's great! So long as you steer clear of the still-buggy level-editor, you'll find that *Monkey Shines* is a very professionally produced game. It's a lot of fun, and will keep you amused for hours on end.

What's more, it's the perfect game if you're fond of a bit of nostalgia, because it proves that if you only dress it up a tad, the old platform formula still has what it takes to come up with a great game. Retro rules!

Star of the month



The only level you can access in the demo is "Spooked". As you can see, the enemies fit well with the level's themes.

We see this screen far too often. Oh dear...

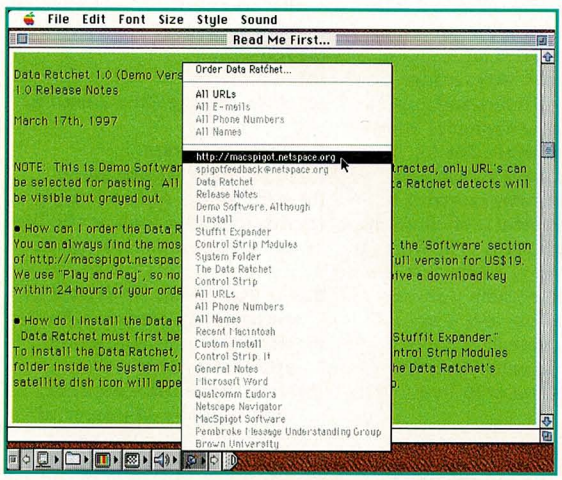
well as making your System Folder less cluttered, you can reduce the chance of Extension conflicts by creating sets of Extensions for specific uses. It's a very useful utility, though unfortunately it doesn't monitor the **Preferences** folder – it's the one part of your System Folder that can get really cluttered with useless files, but you'll need a separate utility to sort it out. (One of the best, *PrefKiller*, is yours on our floppy disk this issue!)

Data Ratchet 1.0

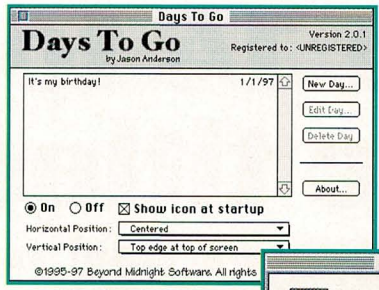
Control strip extension
Shareware, registration fee $19

It's easy to become overloaded with information when you use a computer – and this is particularly true now that there are so many forms of communication available to you. One person could have phone, fax and mobile phone numbers, a Web page, an e-mail address or two *and* a postal address.

Data Ratchet from MacSpigot Software (no, really) can help you, by collecting all the important contact information from a document. All you need to do is select all the text and copy it. When you click on the *Data Ratchet* control strip icon, all the extracted contact details are then shown in a pop-up menu. Then, you can copy the listed information and paste it into other applications, either individually or by type, such as all your e-mail addresses or all your names. The demo on our Cover CD will extract all the information, but only enables you to copy the URLs (Web addresses).



***Data Ratchet* can help you gain control over your address lists, collecting all the important contact information you need. It's fairly intelligent, but, as you can see, it sometimes makes mistakes...**



Never again will you forget that special occasion and have to resort to a gift of windscreen wash, bought at the last minute from the garage up the road.

Days To Go 2.0.1

Utility
Shareware, registration fee $10

Days To Go counts down the days up to or after an event. A date can be set up as either a one-off or recurring (monthly or yearly) event. You then write three messages to be displayed before, during and after that date. You're not limited to just one reminder either – any number can be scheduled. The appropriate messages are then displayed every time you start your Mac, along with a count of how long it is to or after the event.

If you're particularly unorganised, this small utility is really handy, and could reform your forgetful image... **MF**

Rule 4

Always include the version number in your title. The longer and more confusing it is the better, like this: *VenusAttacks! v1.0.5b r2.5.*

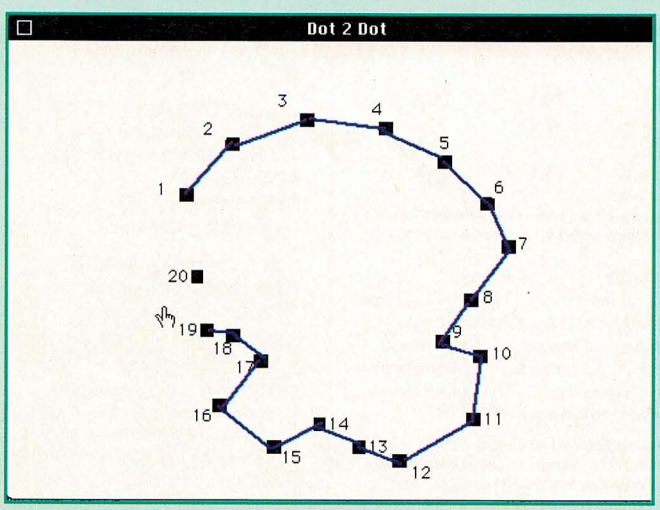
Dot 2 •

Educational
Freeware

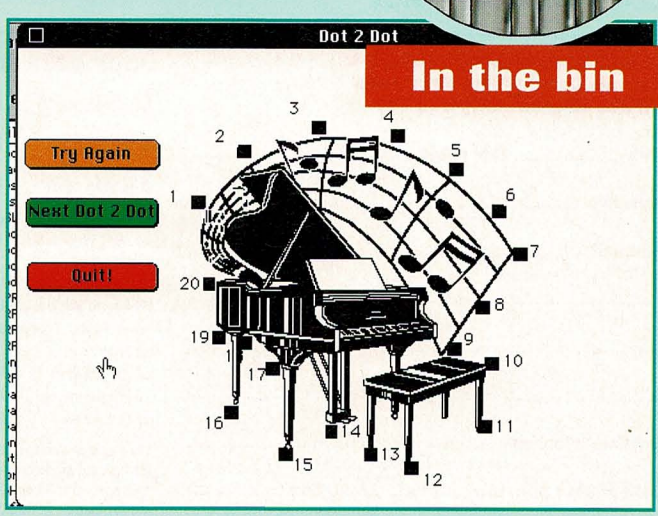
Do you remember the old dot-to-dot books you used to spend hours completing when you were a kid? Well, if you've got an urge to relive that experience, then this is the game for you. *Dot 2* • is touted as educational software, but the only thing we've learned from it is that *SuperCard* should be kept away from people with a warped sense of humour.

The idea is sound enough, but the major problem with *Dot 2* • (and it's a big one), is that it totally misses the point (if you'll excuse the obvious pun). Surely, in a game of dot-to-dot, the outlines you draw should in some vague way resemble the final image? Here, that's simply not the case. Fortunately, there are only four "puzzles" in the game, but if you make it past the first and actually want to go on to the second, then we're slightly worried about you...

In the bin



Can you tell what it is yet...?



Of course, it's a piano! Can't think why I didn't spot it at once.

Win 14 top Mac titles

Win one of ten bundles of Mac software, each containing 14 great titles, courtesy of Emerald Creative Technology.

***The Way Things Work, Makin Music, 3D Atlas, Myst, Descent* and *Grolier Multimedia Encyclopedia 1995*. Win these and eight more top Mac titles!**

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Emerald is a leading mail-order software company specialising in a wide range of educational, games and multimedia software. From art, science and music, plus interactive books, to action, adventure, sport and war games, Emerald has it all.

Emerald is giving away ten prizes of the *Amazing Mac Packs Volumes 1* and *2* – a total of 14 leading Mac software titles including *Myst*, *3D Atlas*, *Grolier Multimedia Encyclopedia* and *The Way Things Work*. Plus, the first two winners drawn will *also* receive a copy of leading presentation program *ClarisImpact v2!*

Myst is the trend-setting graphic adventure game. *Descent* is one of the best Mac games yet, an action-packed combination of flight-sim and blast-'em-up. *The Way Things Work* is an informative and enjoyable CD-ROM for kids that explains through both text and animation the workings of everyday objects such as TVs and vacuum cleaners. *3D Atlas* brings the whole world onto your screen via CD-ROM, enabling you to look at Earth from a variety of angles – geography, political regions, global sea temperatures and more. Armed also with Microsoft's award-winning movie guide *Cinemania*, plus *Grolier Multimedia Encyclopedia*, you'll soon be a potential *Trivial Pursuit* genius!

Among the varied music titles included is *Makin Music*, a huge collection of MIDI files and movies, demos, utilities and samples, covering all styles of music. The full list of each pack's contents is below.

Each *Amazing Mac Pack* costs £29.95, but Emerald is offering ten bundles of both packs to be won, plus *ClarisImpact v2* for the first two winners. To enter, simply answer the three questions and send us your answers by mail or phone – see the "How to enter" box. The closing date is Friday 20 June 1997.

The questions

1. How many titles will the first and second prize winners in this competition each receive from Emerald?
(a) Ten
(b) 14
(c) 15, including *ClarisImpact v2*

2. What is *Descent?*
(a) A downhill-skiing game
(b) A flight-sim / blast-'em-up
(c) A fascinating look at the life of Tibetan mountain goats

3. *The Way Things Work*, part of the prize, shows you what?
(a) How everyday household appliances work
(b) How the world's economy is controlled by 12 powerful multinational companies
(c) How to sing and dance like the Spice Girls

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PLUS the first two names drawn will also receive *ClarisImpact v2!*

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1. You must send us your entry by midnight on Friday 20 June 1997.
2. Employees of Emerald Creative Technology, Future Publishing and associated companies, their agents, and their families, may not enter.
3. Multiple entries are not allowed.
4. The editor's decision is final, no correspondence will be entered into and there are no cash alternatives. No purchase is necessary. **MF**

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2. Alternatively, dial the **MACFORMAT Emerald Competition Hotline:**

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1 (circle one) **(a)** **(b)** **(c)**
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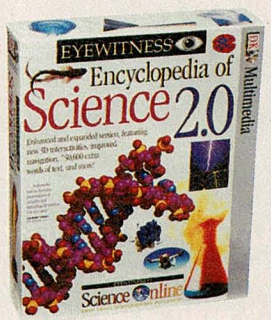

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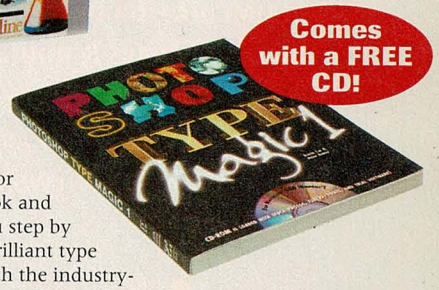

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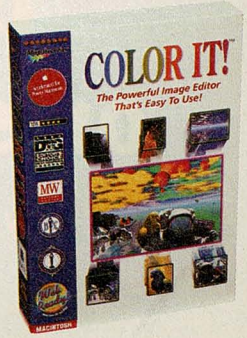

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All PowerBook 1400s come with the following software: *Apple Internet Connection Kit, Apple Remote Access, Claris Organiser, ClarisWorks*														
PowerBook 1400cs/117	PPC 603e	117MHz	No	12Mb	64Mb	1Mb	11.3-inch	750Mb	None	None	2 Type II PC card	None fitted	7.5.3	£2,010
PowerBook 1400cs/117	PPC 603e	117MHz	No	16Mb	64Mb	1Mb	11.3-inch	750Mb	6x	None	2 Type II PC card	None fitted	7.5.3	£2,357
PowerBook 1400cs/117	PPC 603e	117MHz	No	16Mb	64Mb	1Mb	11.3-inch	750Mb	6x	None	2 Type II PC card	None fitted	7.5.3	£2,565
Extras: Colour StyleWriter 2200														
PowerBook 1400c/133	PPC 603e	133MHz	No	16Mb	64Mb	1Mb	11.3-inch	1Gb	6x	128K	2 Type II PC card	None fitted	7.5.3	£3,180
All PowerBook 3400s come with the following software: *Apple Internet Connection Kit, Apple Location Manager, Apple Remote Access, Claris Organiser, WebWhacker*														
PowerBook 3400c/180	PPC 603e	180MHz	No	16Mb	144Mb	1Mb	12.1-inch	1.3Gb	None	256K	2 Type II PC card	None fitted	7.6	£3,541
PowerBook 3400c/180	PPC 603e	180MHz	No	16Mb	144Mb	1Mb	12.1-inch	1.3Gb	12x	256K	2 Type II PC card	Ethernet	7.6	£3,846
PowerBook 3400c/200	PPC 603e	200MHz	No	16Mb	144Mb	1Mb	12.1-inch	2Gb	12x	256K	2 Type II PC card	Ethernet	7.6	£4,154
PowerBook 3400c/200	PPC 603e	200MHz	No	32Mb	144Mb	1Mb	12.1-inch	2Gb	12x	256K	2 Type II PC card	Ethernet	7.6	£4,374
Software: *SoftWindows*														
PowerBook 3400c/240	PPC 603e	240MHz	No	16Mb	144Mb	1Mb	12.1-inch	3Gb	12x	256K	2 Type II PC card	Ethernet	7.6	£5,075
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PowerMac 4400/200	PPC 603e	200MHz	No	16Mb	96Mb	2Mb	Extra	2Gb	8x	256K	2 PCI	Ethernet	7.5.3	£1,327
PowerMac 4400/200	PPC 603e	200MHz	No	16Mb	96Mb	2Mb	15-inch	2Gb	8x	256K	2 PCI	Ethernet	7.5.3	£1,524
Performa 5260/100	PPC 603e	100MHz	No	12Mb	64Mb	1Mb	14-inch	800Mb	4x	None	1 PDS	None fitted	7.5.3	£965
Performa 5260/120	PPC 603e	120MHz	No	12Mb	64Mb	1Mb	14-inch	800Mb	4x	None	1 PDS	None fitted	7.5.3	£1,073
Both Performa 6320s come with the following software: *Aladdin Activity Centre, Apple Internet Connection Kit, ClarisWorks, Daedalus Encounter, Grolier Multimedia Encyclopedia, InBred with Rednex, Lion King Storybook, Makin Music, Mega Rock Rap & Roll, Millie's Math House, Myst, Spin Doctor, SuperMaze Wars, The Way Things Work, Thinkin' Things, Toy Story Preview*														
Performa 6320	PPC 603e	120MHz	No	12Mb	64Mb	1Mb	Extra	1.2Gb	8x	256K	1 PDS	None fitted	7.5.3	£901
Performa 6320	PPC 603e	120MHz	No	12Mb	64Mb	1Mb	15-inch	1.2Gb	8x	256K	1 PDS	None fitted	7.5.3	£1,250
All themed Performas/PowerMacs (Family Mac [coded "FM" here], Home Office ["HO"], Creative Studio ["CS"]) come with the following software: *Acrobat Reader, Aladdin Activity Centre, Apple Internet Connection Kit, Best of European Soccer, ClarisWorks, Descent, Full Throttle, Grolier Multimedia Encyclopedia, Lion King Storybook, Power Pete, Sammy's Science House, Thinkin' Things, Toy Story Preview, Ultimate Human Body*														
Performa 5400/160 ("FM")	PPC 603e	160MHz	No	16Mb	136Mb	1Mb	15-inch	1.6Gb	8x	None	1 PCI	Modem	7.5.3	£1,498
Performa 5400/180 ("FM")	PPC 603e	180MHz	No	16Mb	136Mb	1Mb	15-inch	1.6Gb	8x	None	1 PCI	Modem	7.5.3	£1,761
PowerMac 5500/225 ("FM")	PPC 603e	225MHz	No	32Mb	136Mb	2Mb	15-inch	2Gb	12x	256K	1 PCI	Modem	7.x	£1,935
Extras: 2D and 3D accelerators, TV tuner and FM radio card • **Software:** *Actua Soccer, Kai's Power Goo*														
Performa 6400/180 ("HO")	PPC 603e	180MHz	No	16Mb	136Mb	1Mb	15-inch	1.6Gb	8x	None	2 PCI	Modem	7.5.3	£1,710
Software: *ClarisImpact, Claris Organiser*														
Performa 6400/200 ("HO")	PPC 603e	200MHz	No	16Mb	136Mb	1Mb	15-inch	1.6Gb	8x	256K	2 PCI	Modem	7.5.3	£1,879
Software: *ClarisImpact, Claris Organiser*														
Performa 6400/200 ("CS")	PPC 603e	200MHz	No	24Mb	136Mb	1Mb	15-inch	2.4Gb	8x	256K	2 PCI	Modem	7.5.3	£2,584
Extras: TV tuner card, Avid video card • **Software:** *Avid Cinema, Cubasis, Dabbler, Kai's Power Goo, PageMill, PhotoDeluxe*														
PowerMac 6500/250 ("HO")	PPC 603e	250MHz	No	32Mb	136Mb	2Mb	15-inch	3Gb	12x	256K	2 PCI	Modem	7.x	£2,049
Extras: 2D and 3D accelerators • **Software:** *Actua Soccer, ClarisImpact, Claris Organiser, Kai's Power Goo*														
PowerMac 6500/275 ("CS")	PPC 603e	275MHz	No	24Mb	136Mb	2Mb	15-inch	4Gb	12x	256K	2 PCI	Modem	7.x	£2,669
Extras: 2D and 3D accelerators, TV tuner and FM radio card, Avid video card • **Software:** *3D World, Actua Soccer, Avid Cinema, Cubasis, Dabbler, Kai's Power Goo, PageMill, PhotoDeluxe*														
Both PowerMac 7300s come with the following software: *Apple Internet Connection Kit, Microsoft Office*														
PowerMac 7300/166	PPC 604e	166MHz	Yes	16Mb	512Mb	2Mb	Extra	2Gb	12x	256K	3 PCI	Ethernet	7.5.5	£2,056
PowerMac 7300/200	PPC 604e	200MHz	Yes	32Mb	512Mb	2Mb	Extra	2Gb	12x	256K	3 PCI	Ethernet	7.5.5	£2,467
PowerMac 8600/200	PPC 604e	200MHz	Yes	32Mb	512Mb	2Mb	Extra	2Gb	12x	256K	3 PCI	Ethernet	7.5.5	£2,643
Extras: Zip Drive • **Software:** *Apple Internet Connection Kit*														
All PowerMac 9600s come with an IMS graphics card and *Apple Internet Connection Kit*														
PowerMac 9600/200	PPC 604e	200MHz	Yes	32Mb	768Mb	4Mb	Extra	4Gb	12x	512K	6 PCI	Ethernet	7.5.5	£3,055
PowerMac 9600/233	PPC 604e	233MHz	Yes	32Mb	768Mb	4Mb	Extra	4Gb	12x	512K	6 PCI	Ethernet	7.5.5	£3,524
PowerMac 9600/200 MP	2 x PPC 604e	200MHz	Yes	32Mb	768Mb	4Mb	Extra	4Gb	12x	512K	6 PCI	Ethernet	7.5.5	£3,878

What to look out for

CPU: what type of processor is fitted? All Macs now use a PowerPC chip.
Speed: what's the clock speed?
CPU upgrade: is the processor mounted on a daughterboard, so that

Computer Warehouse

MCM: 0171 724 4104	CPU	Speed	CPU upgrade	RAM	Max RAM	Video RAM	Monitor	HD	CD-ROM	Cache	Expansion	Comms	Mac OS	Price
New York	PPC 604e	200MHz	No	16Mb	160Mb	2Mb	Extra	1.2Gb	16x	256K	3 PCI	None fitted	7.5.5	£1,761
Manhattan	PPC 604e	200MHz	No	64Mb	160Mb	2Mb	Extra	3.8Gb	16x	256K	5 PCI	None fitted	7.5.5	£1,996
Hollywood	PPC 604e	200MHz	No	64Mb	160Mb	2Mb	Extra	3.8Gb	16x	256K	5 PCI	None fitted	7.5.5	£2,349

Extras: Miro DC-20 video card, Zip Drive • **Software:** *mTropolis*

DayStar

CU: 0181 357 5758	CPU	Speed	CPU upgrade	RAM	Max RAM	Video RAM	Monitor	HD	CD-ROM	Cache	Expansion	Comms	Mac OS	Price
Both DayStar systems come with multiple-processor software extensions														
Genesis MP720+	4 x PPC 604e	180MHz	Yes	0Mb	1.5Gb	None	Extra	0Mb	8x	512K	6 PCI	Ethernet	7.5.3	£8,224
Genesis MP800+	4 x PPC 604e	200MHz	Yes	0Mb	1.5Gb	None	Extra	0Mb	8x	512K	6 PCI	Ethernet	7.5.3	£9,399

Motorola

Principal: 01756 704040	CPU	Speed	CPU upgrade	RAM	Max RAM	Video RAM	Monitor	HD	CD-ROM	Cache	Expansion	Comms	Mac OS	Price
StarMax 3180 Desktop	PPC 603e	180MHz	No	16Mb	160Mb	1Mb	Extra	1.2Gb	8x	256K	3 PCI	Modem	7.5.3	£1,021
StarMax 3180 MiniTower	PPC 603e	180MHz	No	32Mb	160Mb	1Mb	Extra	2.5Gb	8x	256K	5 PCI	Modem	7.5.3	£1,174
StarMax 3200 Desktop	PPC 603e	200MHz	No	16Mb	160Mb	1Mb	Extra	1.2Gb	8x	256K	3 PCI	Modem	7.5.3	£1,291
StarMax 3200 MiniTower	PPC 603e	200MHz	No	32Mb	160Mb	1Mb	Extra	2.5Gb	8x	256K	5 PCI	Modem	7.5.3	£1,468
StarMax 3240 MiniTower Plus	PPC 603e	240MHz	No	32Mb	160Mb	4Mb	Extra	2.5Gb	8x	512K	5 PCI	Modem	7.5.3	£1,879
StarMax 4160 Desktop	PPC 604e	160MHz	No	16Mb	160Mb	2Mb	Extra	1.2Gb	8x	512K	3 PCI	Modem	7.5.3	£1,644
StarMax 4160 MiniTower	PPC 604e	160MHz	No	32Mb	160Mb	2Mb	Extra	2.5Gb	8x	512K	5 PCI	Modem	7.5.3	£1,938
StarMax 4200 Desktop	PPC 604e	200MHz	No	16Mb	160Mb	2Mb	Extra	1.2Gb	8x	512K	3 PCI	Modem	7.5.3	£2,231
StarMax 4200 MiniTower	PPC 604e	200MHz	No	32Mb	160Mb	2Mb	Extra	2.5Gb	8x	512K	5 PCI	Modem	7.5.3	£2,349

Power Computing

MCM: 0171 724 4104	CPU	Speed	CPU upgrade	RAM	Max RAM	Video RAM	Monitor	HD	CD-ROM	Cache	Expansion	Comms	Mac OS	Price
Power 100 Mini Tower	PPC 601	100MHz	No	16Mb	256Mb	1Mb	None	540Mb	4x	256K	3 NuBus	None fitted	7.5.3	£939
Software: *CD-ROM Toolkit, ClarisWorks, Grolier Multimedia Encyclopedia, Hard Disk Toolkit, Now Contact, Now Up-to-Date*														
All PowerBase systems come with a built-in 3D graphics acceleration system based on 2Mb DRAM, plus the following software: *CD-ROM Toolkit, ClarisWorks, Grolier Multimedia Encyclopedia, Hard Disk Toolkit, Now Contact, Now Up-to-Date, Quicken SE*														
PowerBase 180 Low Profile	PPC 603e	180MHz	Yes	16Mb	160Mb	Acc	Extra	1.2Gb	8x	256K	3 PCI	None fitted	7.5.3	£1,174
PowerBase 200 Low Profile	PPC 603e	200MHz	Yes	16Mb	160Mb	Acc	Extra	1.2Gb	8x	256K	3 PCI	None fitted	7.5.3	£1,291
PowerBase 200 Mini Tower	PPC 603e	200MHz	Yes	16Mb	160Mb	Acc	Extra	1.2Gb	8x	256K	3 PCI	None fitted	7.5.3	£1,291
PowerBase 240 Low Profile	PPC 603e	240MHz	Yes	16Mb	160Mb	Acc	Extra	1.2Gb	8x	256K	3 PCI	None fitted	7.5.3	£1,526
PowerBase 240 Mini Tower	PPC 603e	240MHz	Yes	16Mb	160Mb	Acc	Extra	1.2Gb	8x	256K	3 PCI	None fitted	7.5.3	£1,526
All PowerCenter systems come with the following software: *CD-ROM Toolkit, ClarisWorks, Grolier Multimedia Encyclopedia, Hard Disk Toolkit, Now Contact, Now Up-to-Date, Quicken SE*														
PowerCenter 132 Low Profile	PPC 604	132MHz	Yes	16Mb	256Mb	1Mb	Extra	1Gb	8x	512K	3 PCI	None fitted	7.5.3	£1,350
PowerCenter 150 Low Profile	PPC 604	150MHz	Yes	16Mb	256Mb	1Mb	Extra	2Gb	8x	512K	3 PCI	None fitted	7.5.3	£1,526
PowerCenter 150 Mini Tower	PPC 604	150MHz	Yes	16Mb	256Mb	1Mb	Extra	2Gb	8x	512K	3 PCI	None fitted	7.5.3	£1,761
PowerCenter 180 Mini Tower	PPC 604	180MHz	Yes	16Mb	512Mb	1Mb	Extra	2Gb	8x	512K	3 PCI	None fitted	7.5.3	£1,879
All PowerTower Pro systems come with the following software: *Animals, CD-ROM Toolkit, ClarisWorks, Grolier Multimedia Encyclopedia, Hard Disk Toolkit, Now Contact, Now Up-to-Date, Now Utilities, Speed Doubler, US Atlas, World Atlas*														
PowerTower Pro 200 Lite	PPC 604e	200MHz	Yes	16Mb	1Gb	2Mb	Extra	2Gb	8x	1Mb	6 PCI	None fitted	7.5.3	£2,462
Extras: ATI graphics card														
PowerTower Pro 200	PPC 604e	200MHz	Yes	32Mb	1Gb	Card	Extra	2Gb	8x	1Mb	6 PCI	None fitted	7.5.3	£2,579
Extras: IMS Twin Turbo graphics card														
PowerTower Pro 225 Lite	PPC 604e	225MHz	Yes	16Mb	1Gb	2Mb	Extra	2Gb	8x	1Mb	6 PCI	None fitted	7.5.3	£2,579
Extras: ATI graphics card														
PowerTower Pro 225	PPC 604e	225MHz	Yes	32Mb	1Gb	Card	Extra	2Gb	8x	1Mb	6 PCI	None fitted	7.5.3	£2,814
Extras: IMS Twin Turbo graphics card														
PowerTower Pro 225 MP	2 x PPC 604e	225MHz	Yes	32Mb	1Gb	Card	Extra	2Gb	8x	1Mb	6 PCI	None fitted	7.5.3	£4,106
Extras: IMS Twin Turbo graphics card														

you can upgrade it later?
RAM: how much RAM is installed?
Max RAM: ... and how much could you install in total?
Video RAM: how much extra RAM is devoted to displaying the screen image? Look out for graphics cards.

Monitor: is a monitor included in the machine's price?
HD: how big is the hard drive?
CD-ROM: is there a CD-ROM drive? If so, what speed is it?
Cache: is there a Level 2 cache for extra speed, and what size is it?

Expansion: what are the main expansion slots and how many are there? Choose between PCI (the most common by far now), NuBus, PDS, and PC Card for PowerBooks.
Comms: many Macs will include a built-in modem, while some business Macs will offer Ethernet for fast networking.
Mac OS: what version of the Mac OS is included?
Price: the estimated street price including VAT. Check the adverts in this issue for the best prices.

Mac Facts continued

Umax

IMC: 01344 871344	CPU	Speed	CPU upgrade	RAM	Max RAM	Video RAM	Monitor	HD	CD-ROM	Cache	Expansion	Comms	Mac OS	Price
All Apus systems come with the following software: *CD-ROM Toolkit, ClarisWorks, Extreme 3D, Fontographer, FreeHand, Hard Disk Toolkit, xRes*														
Apus 2000/160	PPC 603e	160MHz	Yes	16Mb	144Mb	1Mb	Extra	1.2Gb	8x	None	2 PCI	None fitted	7.5.5	£875
Apus 2000/160	PPC 603e	160MHz	Yes	16Mb	144Mb	1Mb	Extra	1.2Gb	8x	None	2 PCI	Ethernet	7.5.5	£934
Apus Desktop Pro 2160	PPC 603e	160MHz	Yes	32Mb	144Mb	1Mb	14-inch	1.2Gb	8x	None	2 PCI	Modem	7.5.5	£1,374
Software: *FaxSTF, Front Office VoiceMail, NetMatters Internet Ready CD, TechTool Pro*														
Apus 3000/200	PPC 603e	200MHz	Yes	16Mb	144Mb	1Mb	Extra	2.1Gb	8x	256K	3 PCI	None fitted	7.5.5	£1,204
Apus Pro 3200	PPC 603e	200MHz	Yes	32Mb	144Mb	1Mb	14-inch	2.1Gb	8x	256K	3 PCI	Modem	7.5.5	£1,712
Software: *FaxSTF, Front Office VoiceMail, NetMatters Internet Ready CD, TechTool Pro*														
Apus 3000/240	PPC 603e	240MHz	Yes	16Mb	144Mb	1Mb	Extra	2.1Gb	8x	256K	3 PCI	Ethernet	7.5.5	£1,669
Apus Pro 3240	PPC 603e	240MHz	Yes	32Mb	144Mb	1Mb	14-inch	2.1Gb	8x	256K	3 PCI	Modem	7.5.5	£2,173
Software: *FaxSTF, Front Office VoiceMail, NetMatters Internet Ready CD, TechTool Pro*														
Apus Movie Maker	PPC 603e	200MHz	Yes	32Mb	144Mb	1Mb	15-inch	2.1Gb	8x	256K	3 PCI	None fitted	7.5.5	£2,744
Extras: Miro video card, Umax scanner • **Software:** *DiskExpress II, FaxSTF, Front Office VoiceMail, NetMatters Internet Ready CD, Photoshop LE, Premiere LE, SoundEdit 16, TechTool Pro, Toast Pro*														
Apus Multimedia Studio	PPC 603e	200MHz	Yes	32Mb	144Mb	1Mb	15-inch	2.1Gb	8x	256K	3 PCI	Modem	7.5.5	£3,289
Extras: 6x CD-recordable drive, Umax scanner • **Software:** *Deck II, Director, FaxSTF, Front Office VoiceMail, NetMatters Internet Ready CD, Photoshop LE, SoundEdit 16, TechTool Pro, Toast Pro*														
All Pulsars come with a Matrox graphics card and the following software: *CD-ROM Toolkit, ClarisWorks, Extreme 3D, Fontographer, FreeHand, Hard Disk Toolkit, xRes*														
Pulsar 200	PPC 604e	200MHz	Yes	32Mb	1Gb	Card	Extra	2Gb	8x	512K	6 PCI	Ethernet	7.5.5	£2,556
Pulsar 225	PPC 604e	225MHz	Yes	32Mb	1Gb	Card	Extra	2Gb	8x	512K	6 PCI	Ethernet	7.5.5	£3,054
Pulsar 200 DP	2 x PPC 604e	200MHz	Yes	32Mb	1Gb	Card	Extra	2Gb	8x	512K	6 PCI	Ethernet	7.5.5	£3,406

Mac Facts: no longer available

Model	CPU	Speed	RAM	Max RAM	Expansion	FPU	Mac OS
Apple Compact Macs							
Mac 128K	68000	8MHz	128K	not exp	None	No	*≤7.0?*
Mac 512K	68000	8MHz	512K	not exp	None	No	*≤7.0?*
Mac Plus	68000	8MHz	1Mb	4Mb	None	No	*≤7.5.5*
Mac SE	68000	8MHz	1Mb	4Mb	1 PDS	No	*≤7.5.5*
Mac Classic	68000	8MHz	1Mb	4Mb	None	No	*≤7.5.5*
Mac SE/30	68030	16MHz	1Mb	128Mb	1 PDS	Yes	*≤7.6*
Classic II	68030	16MHz	2Mb	10Mb	None	Optional	*≤7.6*
Color Classic	68030	16MHz	2Mb	10Mb	1 LC-PDS	Optional	*≤7.6*
Apple Mac II Series							
Mac II	68020	16MHz	1Mb	68Mb	6 NuBus	Yes	*≤7.5.5*
Mac IIx	68030	16MHz	1Mb	128Mb	6 NuBus	Yes	*≤7.6*
Mac IIcx	68030	16MHz	1Mb	128Mb	3 NuBus	Yes	*≤7.6*
Mac IIvi	68030	16MHz	4Mb	68Mb	3 NuBus	Optional	*≤7.6*
Mac IIsi	68030	20MHz	1Mb	65Mb	1 NuBus/PDS	Optional	*≤7.6*
Mac IIci	68030	25MHz	1Mb	128Mb	3 NuBus	Yes	*≤7.6*
Mac IIvx	68030	32MHz	4Mb	68Mb	3 NuBus	Yes	*≤7.6*
Mac IIfx	68030	40MHz	1Mb	128Mb	6 NuBus, 1 PDS	Yes	*≤7.6*
Apple LCs							
Mac LC	68020	16MHz	2Mb	10Mb	1 LC-PDS	Optional	*≤7.5.5*
Mac LC II	68030	16MHz	4Mb	10Mb	1 LC-PDS	Upgrade	*≤7.6*
Mac LC III	68030	25MHz	4Mb	36Mb	1 LC-PDS	Optional	*≤7.6*
Apple Centris series							
Centris 610	68LC040	20MHz	4Mb	68Mb	1 NuBus/PDS	Upgrade	*≤7.6*
Centris 650	68040	25MHz	4Mb	136Mb	3 NuBus, 1 PDS	Yes	*≤7.6*
Apple Performas (non-PowerPC)							
Performa 200	68030	16MHz	2Mb	10Mb	None	Optional	*≤7.6*
Performa 400	68030	16MHz	4Mb	10Mb	1 LC-PDS	Upgrade	*≤7.6*
Performa 450	68030	25MHz	4Mb	36Mb	1 LC-PDS	Optional	*≤7.6*
Performa 475 (= LC475)	68LC040	25MHz	4Mb	36Mb	1 LC-PDS	Upgrade	*≤7.6*

Model	CPU	Speed	RAM	Max RAM	Expansion	FPU	Mac OS
PowerMac 8200/120	PPC 601	120MHz	16Mb	256Mb	3 PCI	Yes	*≤7.6*
PowerMac 8500/120	PPC 604	120MHz	16Mb	512Mb	3 PCI, 1 PD	Yes	*≤7.6*
PowerMac 9500/120	PPC 604	120MHz	16Mb	768Mb	6 PCI, 1 PD	Yes	*≤7.6*
PowerMac 9500/132	PPC 604	132MHz	16Mb	768Mb	6 PCI, 1 PD	Yes	*≤7.6*
PowerMac 7600/132	PPC 604e	132MHz	16Mb	512Mb	3 PCI	Yes	*≤7.6*
PowerMac 8500/180	PPC 604e	180MHz	16Mb	512Mb	3 PCI	Yes	*≤7.6*
PowerMac 9500/200	PPC 604e	200MHz	32Mb	768Mb	6 PCI	Yes	*≤7.6*
PowerMac 9500/180 MP	2 x PPC 604e	180MHz	32Mb	768Mb	6 PCI	Yes	*≤7.6*
DayStar Mac-compatibles							
Genesis MP600	4 x PPC 604e	150MHz	0Mb	1.5Gb	6 PCI	Yes	*≤7.6*
Motorola Mac-compatibles							
StarMax 3160	PPC 603e	160MHz	16Mb	160Mb	3 PCI,	Yes	*≤7.5.5*
Power Computing Mac-compatibles							
PowerCenter 120	PPC 604	120MHz	16Mb	256Mb	3 PCI	Yes	*≤7.6*
PowerWave 150	PPC 604	150MHz	16Mb	512Mb	6 PCI	Yes	*≤7.6*
PowerCenter 166	PPC 604	166MHz	16Mb	512Mb	3 PCI	Yes	*≤7.6*
PowerTower 200	PPC 604	200MHz	16Mb	512Mb	3 PCI	Yes	*≤7.6*
Umax Mac-compatibles							
Pulsar 150	PPC 604	150MHz	16Mb	1Gb	6 PCI	Yes	*≤7.6*
Pulsar 166	PPC 604e	166MHz	16Mb	1Gb	6 PCI	Yes	*≤7.6*
Apple Portables							
Macintosh Portable	68000	16MHz	2Mb	9Mb	Modem slot	No	*≤7.5.5*
PowerBook 100	68000	16MHz	4Mb	8Mb	Modem slot	No	*≤7.5.5*
PowerBook 140	68030	16MHz	4Mb	8Mb	Modem slot	No	*≤7.6*
PowerBook 170	68030	25MHz	4Mb	8Mb	Modem slot	Yes	*≤7.6*
PowerBook 145	68030	25MHz	4Mb	8Mb	Modem slot	No	*≤7.6*
PowerBook 145b	68030	25MHz	4Mb	8Mb	Modem slot	No	*≤7.6*
PowerBook 160	68030	25MHz	4Mb	14Mb	Modem slot	No	*≤7.6*
PowerBook 150	68030	33MHz	4Mb	40Mb	Modem slot	No	*≤7.6*

What to look out for

If you don't own a current Mac, our table will help you check whether a program we've reviewed this issue will work on your model.

CPU: what type of processor is fitted?

Speed: what's the clock speed?

RAM: how much RAM is installed?

Max RAM: ... and how much could you install in total?

Expansion: what are the main expansion slots and how many are there? Choose between PCI (the most

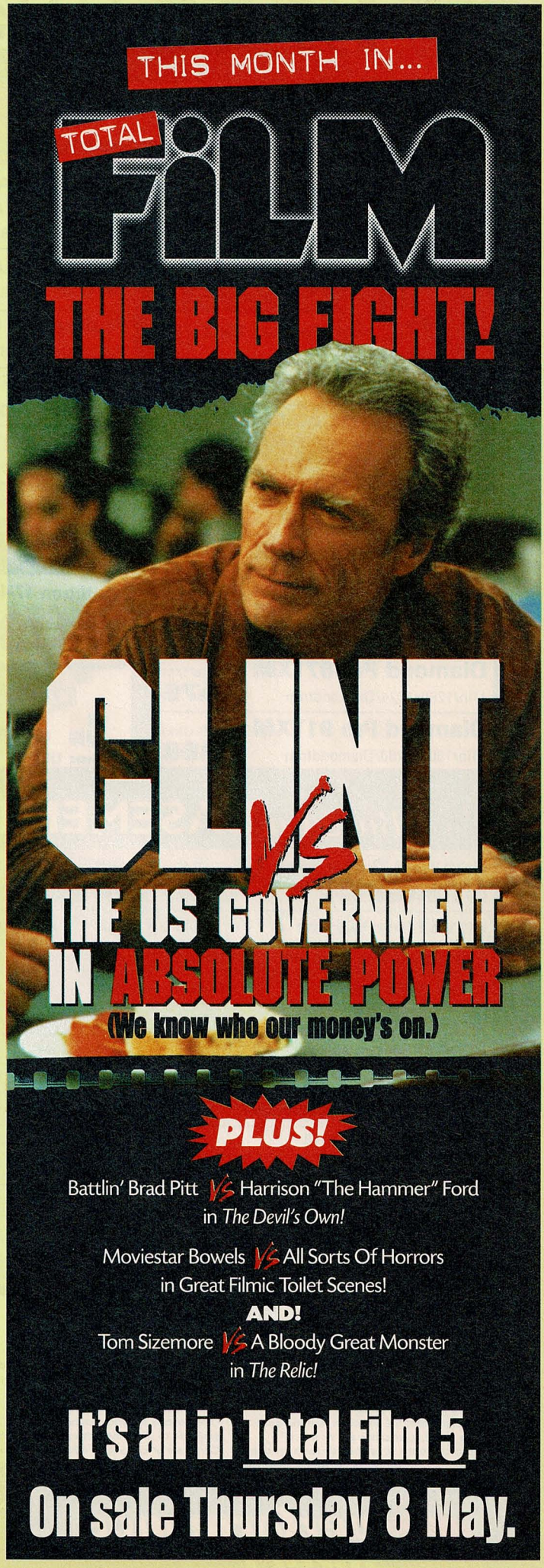
common by far now), NuBus, PDS, and PC Card for PowerBooks.

FPU: the Floating Point Unit speeds up complex maths work like 3D graphics. All PowerPC chips have a built-in FPU.

Mac OS: what is the latest version of the Mac OS your Mac can run? Some older Macs are not capable of running Mac OS 7.6, for example. (Note that you'll still need at least 8Mb of RAM to run the latest Mac OS, even if your processor's up to the job.)

Model	CPU	Speed	RAM	Max RAM	Expansion	FPU	Mac OS
Performa 600	68030	32MHz	4Mb	68Mb	3 NuBus	Optional	≤7.6
Performa 630 (= LC630)	68LC040	33MHz	4Mb	36Mb	1 LC-PDS	Upgrade	≤7.6
Apple Quadra series							
Quadra 610	68040	25MHz	4Mb	68Mb	1 NuBus/PDS	Yes	≤7.6
Quadra 660AV	68040	25MHz	8Mb	68Mb	1 NuBus/PDS	Yes	≤7.6
Quadra 700	68040	25MHz	4Mb	64Mb	2 NuBus, 1 PDS	Yes	≤7.6
Quadra 900	68040	25MHz	4Mb	256Mb	5 NuBus, 1 PDS	Yes	≤7.6
Quadra 650	68040	33MHz	4Mb	136Mb	3 NuBus, 1 PDS	Yes	≤7.6
Quadra 800	68040	33MHz	8Mb	146Mb	3 NuBus, 1 PDS	Yes	≤7.6
Quadra 950	68040	33MHz	8Mb	256Mb	5 NuBus, 1 PDS	Yes	≤7.6
Quadra 840AV	68040	40MHz	8Mb	128Mb	3 NuBus	Yes	≤7.6
Apple PowerPC Performas							
Performa 5200	PPC 603	75MHz	8Mb	64Mb	1 PDS	Yes	≤7.6
Performa 6200	PPC 603e	75MHz	8Mb	64Mb	1 PDS	Yes	≤7.6
Performa 5300	PPC 603e	100MHz	8Mb	64Mb	1 PDS	Yes	≤7.6
Apple Power Macintoshes							
PowerMac 6100/60	PPC 601	60MHz	8Mb	72Mb	1 NuBus/PDS	Yes	≤7.6
PowerMac 6100/66	PPC 601	66MHz	8Mb	72Mb	1 NuBus/PDS	Yes	≤7.6
PowerMac 7100/66	PPC 601	66MHz	8Mb	136Mb	3 NuBus, 1 PDS	Yes	≤7.6
PowerMac 7200/75	PPC 601	75MHz	16Mb	256Mb	3 PCI	Yes	≤7.6
PowerMac 7100/80	PPC 601	80MHz	8Mb	136Mb	3 NuBus, 1 PDS	Yes	≤7.6
PowerMac 8100/80	PPC 601	80MHz	8Mb	264Mb	3 NuBus, 1 PDS	Yes	≤7.6
PowerMac 7200/90	PPC 601	90MHz	16Mb	256Mb	3 PCI	Yes	≤7.6
PowerMac 7500/100	PPC 601	100MHz	16Mb	512Mb	3 PCI, 1 PD	Yes	≤7.6
PowerMac 8100/100	PPC 601	100MHz	8Mb	264Mb	3 NuBus, 1 PDS	Yes	≤7.6
PowerMac 8100/110	PPC 601	110MHz	8Mb	264Mb	3 NuBus, 1 PDS	Yes	≤7.6

Model	CPU	Speed	RAM	Max RAM	Expansion	FPU	Mac OS
PowerBook 165c	68030	33MHz	4Mb	14Mb	Modem slot	No	≤7.6
PowerBook 180	68030	33MHz	4Mb	14Mb	Modem slot	Yes	≤7.6
PowerBook 180c	68030	33MHz	4Mb	14Mb	Modem slot	Yes	≤7.6
PowerBook 165	68030	33MHz	4Mb	14Mb	Modem slot	No	≤7.6
PowerBook 520	68LC040	25MHz	4Mb	36Mb	Modem slot	Upgrade	≤7.6
PowerBook 520c	68LC040	25MHz	4Mb	36Mb	Modem slot	Upgrade	≤7.6
PowerBook 540	68LC040	33MHz	4Mb	36Mb	Modem slot	No	≤7.6
PowerBook 540c	68LC040	33MHz	4Mb	36Mb	Modem slot	No	≤7.6
PowerBook 190	68LC040	33MHz	8Mb	40Mb	2 PC card	No	≤7.6
PowerBook 190cs	68LC040	33MHz	8Mb	40Mb	2 PC card	No	≤7.6
PowerBook 5300	PPC 603e	100MHz	8Mb	56Mb	2 PC card	Yes	≤7.6
PowerBook 5300c	PPC 603e	100MHz	8Mb	64Mb	2 PC card	Yes	≤7.6
PowerBook 5300ce	PPC 603e	100MHz	8Mb	64Mb	2 PC card	Yes	≤7.6
PowerBook 5300cs	PPC 603e	100MHz	8Mb	64Mb	2 PC card	Yes	≤7.6
Apple Duos							
PowerBook Duo 210	68030	25MHz	4Mb	32Mb	Modem slot	With Dock	≤7.6
PowerBook Duo 230	68030	33MHz	4Mb	32Mb	Modem slot	With Dock	≤7.6
PowerBook Duo 250	68030	33MHz	4Mb	32Mb	Modem slot	With Dock	≤7.6
PowerBook Duo 270c	68030	33MHz	4Mb	32Mb	Modem slot	Yes	≤7.6
PowerBook Duo 280	68LC040	33MHz	4Mb	40Mb	Modem slot	No	≤7.6
PowerBook Duo 280c	68LC040	33MHz	4Mb	40Mb	Modem slot	No	≤7.6
PowerBook Duo 2300c	PPC 603e	100MHz	8Mb	56Mb	Modem slot	Yes	≤7.6
Apple Duo Docking Stations							
PowerBook Duo MiniDock		-	-	-	None	No	N/A
PowerBook Duo Dock		-	-	-	2 NuBus	Optional	N/A
PowerBook Duo Dock II		-	-	-	2 NuBus	Yes	N/A
PowerBook Duo Dock Plus		-	-	-	2 NuBus	No	N/A



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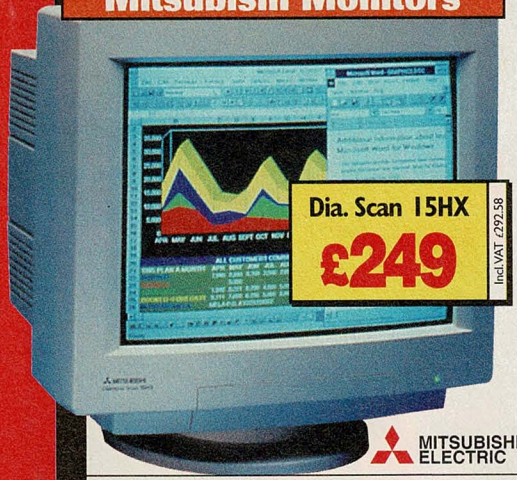
Mitsubishi Monitors



Diamond Scan 15HX 15in/1024x768/FST	VMIT15HX	£249
Diamond Pro 67TXM 17in/1280x1024/Diamondtron	VMIT67TXM	£419
Diamond Pro 87TXM 17in/1280x1024/Diamondtron	VMIT87TXM	£475
Diamond Pro 91TXM 21in/1600x1280/Diamondtron	VMIT91TXM	£989

Formac Monitors & Cards

Provision 2/40 4Mb VRAM/1152x870@80Hz	VPNGA30-2	£199
Provision 4/60 4Mb VRAM/1152x87@100Hz	VPNGA40-3	£299
ProLegend GA 3Mb VRAM/1152x870@75Hz	VPNGA20-0	£319
ProNitron F17 17in/1280x102@70Hz	VPN1787-1	£339
ProNitron 17/400 17in/1280x1024@75Hz	VPN1785-1	£479

Viewsonic Monitors

Viewsonic 14E641 14in/800x600	VVS14E641	£149
Viewsonic 15GS 15in/1024x768	VVS15GS	£235
Viewsonic G800 20in/1600x1280	VVSG800	£739

Apple Monitors

Multiscan 1710 Trin 17in/1280x1024@75Hz	VM4588B/A	£499
Multiscan 1710AV Trin 17in/1600x1280@75Hz	VM4589B/A	£549

Bargain BASEMENT

Global Village 33.6Kbps Modem	MGV33.6D	~~was £119~~	now £99.00
Pulsar 225Mhz Computer	CUMAX225D	~~was £2599~~	now £2499.00
IBM 1Gb External Hard Drive	D1GIED	~~was £239~~	now £199.00
2.6Gb Optical Drive Inc. 1 Cart.	OP2600ED	~~was £999~~	now £799.00
Twisted Pair LC Card	ETWPLCD	~~was £59~~	now £45.00
Notepac Carry case	TARGUS	~~was £30~~	now £19.99
Wacom A6 Tablet Inc. Dabbler - PC	WGTA6DAB	~~was £169~~	now £119.99
2 Speed CD Writer	DCDR2EFD	~~was £449~~	now £369.00
2Gb External Drive (IBM/QUANTUM)	D2GIED	~~was £249~~	now £229.99
256 Cache Card 61/71/8100	CC256	~~was £32~~	now £29.99
540Mb Maxit Ext SCSI Drive (Blue)	DMAXYD	~~was £249~~	now £169.99
Insignia SoftWindows 95	SWINSW95	~~was £189~~	now £168.99

Some items may be ex-demonstration units, or have damaged packaging and/or missing manuals. Full manufacturers warranties apply. Limited stocks. First come first served.

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We constantly monitor competitors prices to make sure that we can offer you the best value for money deals around. Our Price Promise policy is to match or beat competitors prices for any product we stock.
This is provided the product is new and is the same model, specification and version, is supported to the same post-sale levels we offer, is in stock, has the same warranty and is available from the competitor on the same day of purchase. In some cases where margins are particularly tight we may require to see a written quotation from the other party. Unfortunately, the price promise is not applicable to sales where manufacturer backed Corporate or Educational discounts are quoted.

Best Selling PRINTERS

HP Printers

DeskWriter 870cxi Col Inkjet	PC4555A	£292
LaserWriter 4MV A3 Laser	PC3167A	£1899
LaserWriter 6MP A3 Laser	PC3982A	£575

Apple Printers

Colour Stylewriter 1500	PM4428BA	£149
Colour Stylewriter 2500	PM4236B	£219
Laserwriter 4/600PS	PM3920B/A	£569
Laserwriter 12/640PS	PM3978D/A	£1049

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Best Selling SYSTEMS

PowerMac 4400/200

- 200Mhz PPC 603e processor (optional 256k L2 cache)
- 16Mb RAM (upto 96Mb)
- 1.2Gb or 2Gb Drive
- Internal 8xCDRom
- Optional Ethernet
- 3 PCI expansion slots
- 1Mb or 2Mb VRAM (upto 4Mb) supports 1280x1024 pixels
- Mouse & keyboard

PowerMac 4400/200 CM5766BA
16/1.2Gb/8xCD **£869**

PowerMac 4400/200+ CM5842B/A
16/2Gb/8xCD/L2/ENet **£999**

PowerMac 7300

- 166 or 200Mhz PPC 604e with 256k L2 cache
- 16 or 32Mb RAM (upto 512Mb)
- Fast 2Gb Hard Drive
- 2Mb Fast 64bit VRAM upto 4Mb (1280x1024)
- Fast SCSI (up to 10Mb/s)
- Internal 12 x CD Rom
- 3 PCI expansion slots
- Built-in Ethernet
- 256k Level 2 cache
- Apple Internet Kit
- Mouse & keyboard

PowerMac 7300/166 CM5542B/A
16/2Gb/12xCD/L2/Enet **£1599**

PowerMac 7300/200 CM5543B/A
32/2Gb/12xCD/L2/Enet **£1979**

PowerMac 8600

- 200Mhz PPC 604e with 256k L2 cache
- Fast 2Gb Hard Drive
- Internal 100Mb Zip Drive
- Built-in Ethernet
- Mouse & keyboard

PowerMac 8600/200 CM5453B/A
32/2Gb/12xCD/L2/Enet **£2099**

PowerMac 9600

- One or Two 200Mhz PPC 604e with 512k L2 cache
- Fast 4Gb Drive
- Built-in Ethernet
- Apple Internet Kit
- Mouse & keyboard

PowerMac 9600/180 CM5456B/A
32/2Gb/12xCD/L2/Enet **£2459**

PowerMac 9600/200MP CM4952B/A
32/2Gb/12xCD/L2/Enet **£3099**

Powerbooks

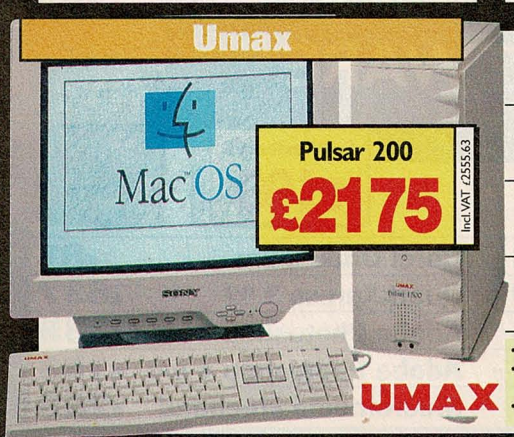
Powerbook 1400cs/117 CM5287B/A
12/750/11.3" Dual Scan **£1589**

Powerbook 1400c/133 CM5576B/A
16/1Gb/CD/L2/11.3" Active **£2489**

Powerbook 3400c/200 CM5885B/A
32/2Gb/CD/L2/Enet/12.1" Active **£3499**

Spec for 3400c/200 only
- 180, 200 or 240Mhz 603e with 256k L2 cache
- 16Mb or 32Mb RAM (up to 144Mb)
- Up to 3Gb HD
- 12.1in SVGA active-matrix display
- Up to 12 speed CD Rom
- PC Card expansion slots
- Optional ENet

Umax



Apus 2000/160 CAPUS2000/160
16/1.2Gb/8xCD **£745**

Apus 3000/200 CAPUS3000/200
16/2Gb/8xCD/L2 **£1025**

Pulsar 200 CUMAX200
16/2Gb/8xCD/L2/Enet **£2175**

Pulsar 225 CUMAX225
16/2Gb/8xCD/L2/Enet **£2599**

- Choice of 3 Models:
- 180 to 225Mhz PPC 604e processor
- 16Mb RAM, up to 1Gb
- 2Gb Hard Drive
- 8 x speed SCSI CD ROM
- 6 PCI slots
- Includes Keyboard & Mouse

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Best Selling MEDIA

Media

Verbatim Datalife +CDR DatalifePlus 74min	M91224	£4.75
Verbatim 230Mb Opt Disk 3.5" Optical Disk	M90672	£6.99
Verbatim 2.6Mb Opt Disk 5.25" Optical Disk	M91204	£39.99
Verbatim 90m DAT Tape 4mm 90m DAT Tape	M88195	£4.49
Verbatim 120m DAT Tape 4mm 120m DAT Tape	M89547	£12.49
100Mb Zip Disk Iomega 100Mb Zip Disk	D100ZIPCART	£9.70
1Gb Iomega Jaz Cart 1Gb Jaz Disk	D1JAZCART	£59.00
88Mb Syquest Cartridge 5.25" 88Mb Syquest	MSQY88	£29.99

Best Selling SCANNERS

Umax Scanners

The Umax S6E offers excellent quality at an entry level price for DTP, design and OCR applications. It can scan an A4 colour image at an amazing 23 secs. Bundled with Vistascan, Photoshop 3.0 LE is available for £25 extra.

Vista S6E 600X300dpi/24bit/Optional Photoshop	UVS6E	£175
Vista S12E 1200X600dpi/24bit/Optional Photoshop	UVS12E	£325
Powerlook II 1200X600dpil/36bit/Optional Photoshop	UPLIIPRO	£1499
Mirage A3 1600X800dpil/30bit/Optional Photoshop	UMD16	£4999

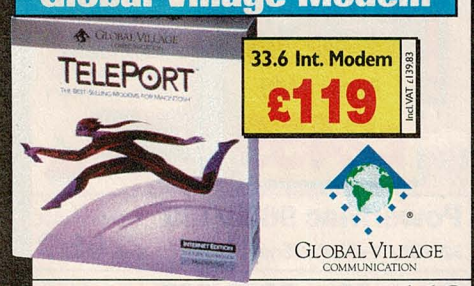
Visioneer Paperport

Best Selling NETWORKING & COMMS

Sonic Ethernet

Thin Net BNC Trans	ET2	£24.95
Twisted Pair Trans	ETI	£19.99
Microprint 2	EMP2	£189

Global Village Modem



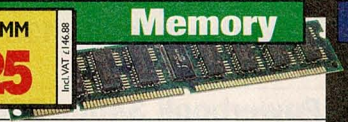
Teleport 33.6	MGV33.6	£119
Teleport 33.6 9 pin	MGV33.6/8	£119

SMC Cards

TWP LCI Card	ETWPLC	£52
TWP Nubus Card	ETWPII	£49
TWP PCI Card	ETWPPCI	£49
A1 PCI Card	EA1PCI	£74
TWP Comm Slot	ETWPCS	£49
5300 PC Card	ETWPPC	£89

Best Selling MEMORY

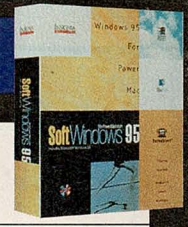
Memory



4Mb 30pin Simms	£27
16Mb 72pin Simms	£58
32Mb 72pin Simms	£118
16Mb 168pin Dimms	£59
32Mb 168pin Dimms	£125

Best Selling SOFTWARE

Business & Graphics



Insignia SoftWindow 95	£199		**Corel Draw 6** U/G	£81
Adobe TypeManager 4	£39		**QuarkXpress 3.32**	£637
Norton Utilities 3.2	£66		**Adobe Photoshop 4**	£339
Symantec Suitcase 3	£47		**Adobe Photoshop 4** U/G	£153
Claris FileMaker Pro 3	£143		**Macromedia Freehand**	£289

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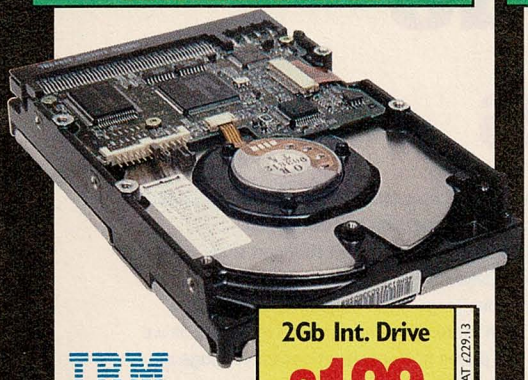
Internal Drives



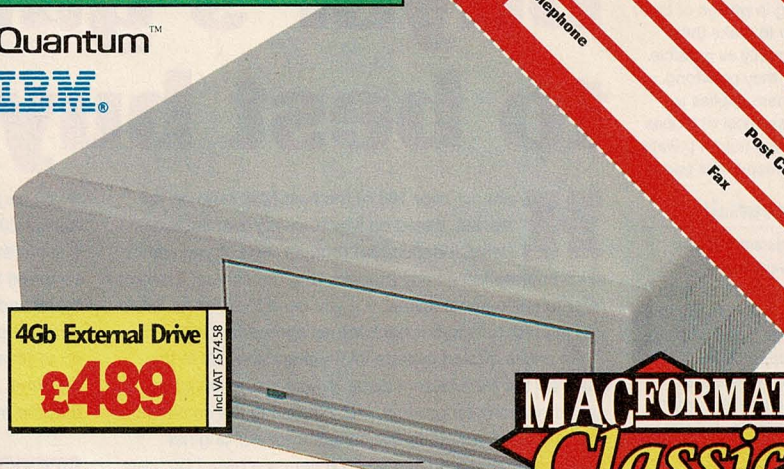
2Gb Int. Drive £199 Incl VAT £229.13

IBM. Quantum™

2Gb Quantum AV Int SCSI AV Internal 4500/5400rpm	D2GQI	**£195**
2Gb IBM AV Int SCSI AV Internal 3.5in Drive	D2GII	**£259**
4Gb Quantum AV Int SCSI AV Internal 7200rpm	D4GQI	**£call**
4Gb IBM AV Int SCSI-2 AV Internal 7200rpm	D4GII	**£609**

External Drives

Quantum™ IBM.®



4Gb External Drive £489 Incl VAT £574.58

2Gb IBM AV Ext SCSI AV External 3.5in Drive	D2GIE	**£289**
4Gb Quantum AV Ext SCSI AV External 7200rpm	D4GQE	**£609**
4Gb IBM AV Ext SCSI-2 External 5400rpm	D4GIE/2	**£489**
9Gb Fujitsu Ext SCSI-2 AV External WSL	D9GFE	**£899**

MACFORMAT Classic

Our product team at Performance Direct put painstaking time and effort into sourcing the best possible products for your needs. An example is our high performance drive mechanisms sourced from world leading manufacturers like IBM, Seagate, and Quantum. We burn in, preformat and test every drive with Charismac's award winning Anubis utility software to ensure reliability. We even ship you a free copy of Anubis with every drive so that you can partition, re format or test your drive.

CD Writer

6speed CDWriter £489 Incl VAT £574.58

Formac UK

Formac 6xCD Writer 6 speed Ext Writer inc toast (Mac)	DCDR46EF	**£489**

Iomega Drives

iomega

1Gb Jaz Drive £299 Incl VAT £351.33

100Mb Zip Drive £99 Incl VAT £116.33

100Mb Zip Drive External 100Mb Zip Drive	D100ZIP	**£99**
1Gb Jaz Drive External 1Gb Jaz Drive	D1GJAZIE	**£299**

CD ROM

8-Speed CD ROM £139 Incl VAT £163.33

Take your CD ROMs to a whole new level of performance with our new faster CD ROM Drive.
- Fast 8 x Speed Drive
- Photo CD Compatible
- Free SpotCD software for extra speed

8 x Speed CD ROM 8 speed CD ROM for Mac	DCD8E	**£139**

DAT External Drive

4-16Gb DAT Drive £589 Incl VAT £692.08

SONY

4-16Gb DAT Drive 4-16Gb DAT External	DAT4E	**£589**
Retrospect Software Retrospect Backup 3.0 Software	PDSR	**£69**

Retrospect 3.0 S/W £69 when purchased with Removeable Drive offer ends 30.6.97 Incl VAT £81.08

Xyratex Drive

Includes 1 FREE Disk

540Mb MaxIT Drive £199 Incl VAT £233.83

xyratex

540Mb MaxIT Drive (Blue) Mac SCSI incl. FREE Disk	DMAXB	**£199**

Verbatim OptiDriver

640Mb Opti Drive £429 Incl VAT £504.08

Verbatim

640Mb OptiDriver 640Mb SCSI Optidriver Mac External	OF640E	**£429**

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Buying advice

Whether you're buying in person or by mail order, here's how to make the transaction go as smoothly as possible, and put things right if they go wrong. Note that everything here applies to buying from a business; most of it does *not* apply if you're buying from a private seller in MACFORMAT's reader ads pages.

How to protect yourself

If you are buying goods worth more than £100 in total, always use a credit card if possible, for the whole or even just a part of the price. That way, in the unlikely event of anything going wrong, you'll be legally entitled to claim against the credit card company as well as the seller. (You won't get your money back twice, of course, but the credit card company is likely to be there to claim against, even if the seller has gone bust.) You might also get extra insurance for your purchase – check with your credit card company.

If you don't have a credit card, pay by cheque or postal order (ask at your post office). Never send cash through the mail, even by registered mail. Apart from any risk of theft, you can't stop payment if you need to, and even if you have proof of posting, it is impossible to prove how much you sent.

Keep records. If you're paying by credit card over the phone, keep a note of the exact time of the order and the name of the person who took it, and ask for an order number. If you're paying by cheque, make sure you fill in the details of the date, amount and payee's exact name on the stub – and keep it somewhere safe! Always keep all receipts, and make notes of all correspondence by mail or phone.

Other sensible precautions

- Shop around for the best price and check what is included. Packing and delivery? Any necessary cables? VAT? By law, an advert must say *explicitly* if VAT is *not* included; if it doesn't, VAT *is* included. But this can be in the small print, so do check.
- If you're buying by mail, ring first to confirm price and availability. Explain what you want the product for and satisfy yourself that you're getting what you need – you can't return something later just because you've changed your mind. Ask what the dealer's policy is should you have problems – few mail-order dealers offer "on-site" service. Find out when you can expect delivery.
- If you're buying in person, check that everything works before you leave the shop. If you've ordered by mail, check the goods carefully when they arrive. If the driver's in a hurry, mark the delivery note "Goods not inspected". If there's any part of the product you're not happy with, don't use it. If you do, you could be deemed to have accepted it.
- Whether you bought it by mail or in a shop, the law says a product must be:

1. "Of satisfactory quality" (that is, broadly speaking, it must work);
2. "As described" (in the advert or in

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Buyer's guide to best buys

Here are over 160 of the best Mac buys on the market, based on MACFORMAT's own authoritative, independent product tests. If you want more information on any product, ring the contact listed or refer to our original review – if you need to order an issue you missed, turn to our back issues service on page 145.

All prices quoted include VAT – check the ads in this issue for the best current deals. Where we reviewed an earlier version of a product, this is noted in the comment line. Although we quote the ratings from our original review, the comments about each item are based both on that review *and* how we see the product now. *Word 6* might be just as good now as when we reviewed it in MACFORMAT 20, but the competition has developed.

Note that some details may have changed since we first reviewed these products – hardware in particular is updated and improved regularly. The information in these listings has been thoroughly checked and is correct as we go to press, but prices and specifications can change at any time. Always make enquiries before you buy, to verify that the product you're considering will meet your needs.

MF CLASSIC We give the MACFORMAT Classic award only to products that set the standards for others to follow.

Storage media

What do you do when your hard disk is full to the brim? External storage devices can provide much-needed extra storage capacity or become a portable storehouse for vast quantities of data.

Name	Price	Rating	Reviewed	Contact	Telephone
Electronique d2 640Mb MO	£551	80%	MF48	Electronique d2	0171 833 0009
A respectable 3.5-inch magneto-optical drive, which is let down by its price and documentation.					
Electronique d2 2.6Gb MO	£2,114	83%	MF43	Electronique d2	0171 833 0009
A fast and neat magneto-optical drive, but it's expensive and comes with only basic software and poor documentation.					
Electronique d2 2Gb AV HD	£512	90%	MF43	Electronique d2	0171 833 0009
MF CLASSIC A stylish external hard disk with minimal documentation; basic driver software, but lightning-fast.					
Electronique d2 540 MCD	£288	83%	MF48	Electronique d2	0171 833 0009
One of the faster magnetic cartridge drives around, with full formatting and driver utilities.					
Gasteiner 1Gb HD	£293	90%	MF34	Gasteiner	0181 345 6000
MF CLASSIC A fast, cheap and compact hard drive, but with an extremely noisy fan.					
Iomega Zip Drive	£141	81%	MF48	Iomega	0800 973194
A well-established, cheap 3.5-inch 100Mb drive that feels a bit creaky and is looking rather slow in this day and age.					
MicroNet Jaz Drive	£469	94%	MF43	MicroNet	01926 470460
MF CLASSIC The successor to the Zip drive uses astonishing 3.5-inch 1Gb cartridges and is fast, portable and cheap.					
Olympus 230Mb PowerMO	£351	91%	MF43	Mac & More	01442 878900
MF CLASSIC A compact 3.5-inch magneto-optical drive that's neat, fast, cheap, and comes with a long-term warranty.					
ONE Tech 2.6 Optical Drive	£1,268	95%	MF34	MacTrix	0181 566 8988
MF CLASSIC Pretty fast, quiet, inexpensive and hard to fault. We reviewed the ONE Tech 1.3Gb MO.					
Performance Direct 2Gb HD	£375	92%	MF43	Performance Direct	01784 477477
MF CLASSIC An inexpensive and functional-looking hard disk which comes with excellent driver software.					
Quantum Fireball 1.2Gb HD	£269	88%	MF34	Performance Direct	01784 477477
A quiet, very fast hard drive with a good-length SCSI cable. We reviewed the Quantum Fireball 1Gb HD.					
Xyratex 5000 2.6Gb MO	£1,409	90%	MF43	Performance Direct	01784 477477
MF CLASSIC Reasonable performance and good value for money from this big slab of a magneto-optical drive.					

Monitors

Not all monitors are the same. How sharp is your picture? Are the colours crisp and true to life? What resolutions are available? Is there any distortion? We've tested both 15-inch and 17-inch models.

Name	Price	Rating	Reviewed	Contact	Telephone
AppleVision 1710	£927	92%	MF40	Apple	0800 127753
MF CLASSIC A 17-inch monitor with easy controls, overscan (no black borders) and superb picture quality.					
Hitachi 17MVX Pro 2	£704	85%	MF40	Hitachi	0800 605605
Good performance even at high resolutions, although setting up the screen could get fiddly and tedious.					
Hitachi 17MVX V2	£551	83%	MF44	Hitachi	0800 605605
Good picture quality and comprehensive controls but disappointing documentation. Impressive for the price.					
Iiyama Pro 17-inch	£735	89%	MF40	Iiyama	01438 745482
The DiamondTron screen provides excellent quality even at the staggering maximum resolution of 1,600 x 1,200.					

Name	Price	Rating	Reviewed	Contact	Telephone
Mitsubishi 15HX	£376	82%	MF40	Mitsubishi	01707 276100
This screen uses Mitsubishi's DiamondTron system to get close to Trinitron quality and provide an excellent display.					
Mitsubishi 17HX	£758	83%	MF40	Mitsubishi	01707 276100
Good quality except at the highest resolution, and comes with an anti-moiré function. The manual could be more helpful.					
Samsung 17GLsi	£822	84%	MF40	Samsung	0800 521652
A 17-inch unit with a maximum resolution of 1,280 x 1,024 and a Trinitron tube. Excellent quality at all resolutions.					
Sony 15sfII	£465	91%	MF40	Sony	0181 760 0500
MF CLASSIC Unusually for a 15-inch monitor, the Sony provides superb picture quality at all resolutions.					
Sony 17sfII	£763	92%	MF40	Sony	0181 760 0500
MF CLASSIC Picture quality is excellent at all resolutions, setting up is easy and the manual is excellent.					
Taxan Ergo Vision 730TCO	£735	84%	MF40	Taxan	01344 484646
This 17-inch monitor offers better picture quality than its 15-inch smaller brother. We reviewed the Ergo Vision 730LR.					

Graphics cards

Speed up your Mac's display with an accelerator card. Different models can be set up to add resloution and colours, improve 3D rendering or offer all-round improvements.

Name	Price	Rating	Reviewed	Contact	Telephone
ATI Xclaim GA	£293	79%	MF45	ATI	01235 833666
The Xclaim GA has a good mix of useful features and it's a solid performer, but it would benefit from a price cut.					
Formac ProLegend GA (NuBus)	£622	80%	MF45	Formac	0181 533 4040
This card has a good range of features, but it's not terribly fast. Also, it doesn't support thousands of colours.					
Formac ProVision 4/60	£499	87%	MF45	Formac	0181 533 4040
The ProVision 4/60 has a broad range of features, good documentation and is very fast indeed.					
IMS Twin Turbo 128M2	£352	83%	MF45	Principal	01756 704040
Although slow in real-world tests, we liked this card because of its ease of use and upgradability.					
Matrox MGA Millennium	£234	88%	MF45	Principal	01756 704040
Pretty speedy and great value for money – this card offers not only 128-bit graphics, but also has QuickDraw 3D.					

Digital input

How do you get analogue data from the real world into digital data on your Mac? Here is MACFORMAT's pick of scanners, digital cameras and related software.

Name	Price	Rating	Reviewed	Contact	Telephone
Connectix Colour QuickCam	£199	85%	MF45	Connectix	0171 622 3355
As an unpretentious, low-cost and fun entry to digital still and video images on the desktop, it's difficult to fault.					
Epson GT-5000 scanner	£469	81%	MF41	Epson	01442 61144
This scanner's a little fuzzy but has reasonable colour reproduction. A little lacking in features, with poor documentation.					
Kodak DC-20 camera	£353	91%	MF41	Kodak	0800 281487
MF CLASSIC Pretty low-resolution digital camera but extremely easy to use and fun too.					
Microtek Scanmaker E3	£328	86%	MF41	CU	0181 358 5857
At 600dpi, images were a bit fuzzy and lost subtlety, but overall performance is very acceptable for a scanner of this price.					
Nikon Coolpix 100	£516	80%	MF50	Nikon	0800 230220
If you want a simple way to get digital images onto your PowerBook, this digital camera could be the solution.					
Umax Vista S6E scanner	£499	85%	MF41	IMC Distribution	01344 872800
Very fast scanner but with a little fuzziness and difficulty with greens. Otherwise quality was good, given the price.					
Visioneer PaperPort scanner	£293	86%	MF28	CU	0181 358 5857
Tiny A4 mono scanner that can sit between your keyboard and Macintosh – sheets are rolled in and out.					

Printers

Are you shopping for a mono printer or colour? Portable or desktop? PostScript or non-PostScript? Inkjet or laser? We've reviewed dozens of printers for every need, and here is our pick of the best.

Name	Price	Rating	Reviewed	Contact	Telephone
ALPS MD-2010	£529	90%	MF45	Rotec Distribution	01604 402012
MF CLASSIC Slow and clackety though it might seem, the MD-2010 produces quite superb colour and definition.					
Apple LaserWriter 12/640 PS	£1,387	80%	MF47	Apple	0800 127753
A perfectly adequate laser printer – slightly over priced, but ideal if you feel safest wih an Apple badge on your hardware.					
Apple StyleWriter 1500	£275	90%	MF38	Apple	0800 127753
MF CLASSIC For the price, excellent colour performance even on plain paper.					
Apple StyleWriter 2500	£359	84%	MF38	Apple	0800 127753
A big improvement on its predecessor the 2400, but not quite in the same league as colour rivals from HP and Epson.					

Buying advice continued

person – and this criterion applies also if you're buying from a private seller);
3. Fit for the purpose for which it was sold or which you specified.
If it fails to meet any or all of these criteria, you are entitled to return the product for a full refund, get compensation for all or part of the value, or get a replacement or free repair, depending on the seriousness of the defect. These are the "statutory rights" that adverts always say are "not affected" by any extra guarantees. A dealer can't deny these rights or add conditions (such as "provided goods are returned to us at your expense within seven days").

How to complain

If you're not happy about something, contact the supplier first and politely explain your concerns. Be patient; if there's some technical problem, it may genuinely take some time to find a solution. Most difficulties are sorted out at this stage without further fuss.

If yours isn't, put your complaint in writing, clearly stating your problem and what you'd like done. Give the firm a reasonable time to reply – say 14 days or so.

- If your complaint is not resolved, you may need to take some sort of legal action to enforce your rights. This need not cost you a lot of money. Seek advice from a solicitor (ask about the free advice scheme – you may not have to pay for the initial consultation). Or contact one of the following (check in your local phone directory):
- The Citizen's Advice Bureau,
- Trading Standards Office (listed under your local council),
- Office of Fair Trading, or
- County Court (ask about the Small Claims procedure).

Where to buy

- Mail-order companies are ideal if you know what you want and how to set it up, and therefore just want the best price.
- Retailers are a good bet if you need advice and technical assistance, and you want to examine products before you buy them.

There are a several types of retail outlet selling Macintosh products:

- Authorised Apple resellers may not always offer the best price, but you can expect a wide choice of hardware and software, and considerable expertise.
- Major retail chains can be another, sometimes more accessible, source. The Dixons group sells a limited number of models in the Mac range, while Comet and PC World stock hardware and software. Check with your local store before visiting, though – smaller stores may not stock a useful range.
- Entertainment chains like HMV now carry Mac software in some branches.
- Finally, independent retailers may stock Mac products. Check your local Yellow Pages for more information.

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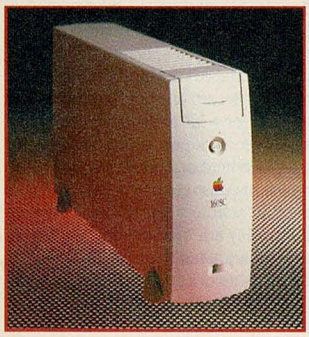
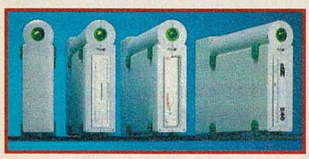
Product news

New Apple drives from d2



Leading peripheral maker électronique d2 is releasing more Apple-badged external hard drives, extending its range with new **1.2Gb, 2Gb, 4Gb** and **9Gb** drives. All these drives have interchangeable foot pads, so they can be used upright or lying down, and they have front panel controls for ease of use. All are Ultra SCSI-3 compatible and come with d2's *Silverlining* driver software and additional disk management utilities. Expect to pay around £323 for the 1.2Gb drive, £351 for the 2Gb, £693 for the 4Gb, and £1,750 for the 9Gb unit from retailers. For more information, contact électronique d2 on 0171 833 0009.



Électronique d2 has also announced its new "**Eko**" casing range, complementing its existing steel casings. The new plastic casings are currently the smallest external drive units containing a power supply, but their main claim to fame is their ecological superiority to other product housings: the power supply is an energy efficient 30-watt type, the material contains no lead or cadmium, is made without environmentally harmful chemicals and is 95% recyclable. There's a low-noise fan with a fine grille to prevent dust being drawn into the workings, and all of d2's 3.5-inch hard disks and removable drives are now available in Eko casings at no extra cost. Phone électronique d2 on 0171 833 0009 for details.

New from ViewSonic

ViewSonic's **PT813** is a new **21-inch** monitor aimed at professionals in fields

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Name	Price	Rating	Reviewed	Contact	Telephone
Epson EPL-5500	£469	89%	MF39	Epson	01442 61144
Compact and light 600dpi PostScript printer with a useful 5Mb of RAM. You'll need to buy a lead for your Mac, though.					
Epson Stylus Pro	£513	90%	MF38	Epson	01442 61144
MF CLASSIC Built like a breeze block, but offers stunning smoothness. Almost as good as a dye-sub printer.					
FotoFUN! Printer	£493	87%	MF31	Bannerbridge	01268 419101
Affordable, good quality dye-sub colour output. Takes up little space but only prints out 6-inch x 4-inch snapshots.					
HP LaserJet 5MP	£1,198	95%	MF29	Hewlett Packard	0990 474747
MF CLASSIC 600dpi PostScript laser printer with excellent greyscale and remarkable output quality at the price.					
HP DeskJet 340	£235	85%	MF27	Hewlett Packard	0990 474747
Portable 300dpi inkjet with colour capability and excellent output quality. We reviewed the HP DeskWriter 320.					
HP 870cxi	£494	92%	MF38	Hewlett Packard	0990 474747
MF CLASSIC First-rate colour balance and very good performance on plain paper. We reviewed the HP 850C.					

Modems

If you want to connect to the Internet, to bulletin boards, on-line services or even friends and acquaintances via your Mac, you need a modem. The faster the modem, the cheaper it will be to run.

Name	Price	Rating	Reviewed	Contact	Telephone
Global Village Platinum	£234	92%	MF39	Global Village	0990 420421
MF CLASSIC The Teleport Platinum is a slick, fast and stylish 28.8K modem with a good manual, fax and OCR software.					
Motorola 3400	£150	90%	MF39	Gasteiner	0181 345 6000
MF CLASSIC Uncomplicated and easy to set up 28.8K modem, but with rather basic fax software.					
SupraExpress 33.6	£175	89%	MF39	CU	0181 357 5758
Plain-looking 33.6K modem powered by your ADB keyboard port. We reviewed the SupraExpress.					
US Robotics Mac & Fax	£199	89%	MF39	US Robotics	0800 225252
The Mac & Fax Sportster is a fast and reliable 28.8K modem, but there's no straight-through port to plug a telephone into.					

Input devices

There are plenty of alternatives to your regular keyboard and mouse, including some for specialised use. Take a look at graphic tablets as well – these enable you to sketch into art packages.

Name	Price	Rating	Reviewed	Contact	Telephone
AlphaSmart Pro Keyboard	£234	86%	MF47	Chromasonic	0181 203 8989
Doubles brilliantly as a portable word processor, but as a keyboard it's let down by spongy key action.					
Apple Adjustable Keyboard	£166	81%	MF47	Apple	0800 127753
A space-age split keyboard which is remarkably comfortable, but bulky and overpriced.					
Apple Design II Mouse	£29	83%	MF47	Apple	0800 127753
Shapely mouse with positive click but a little bulky for smaller hands. It's standard with most PowerMacs and Performas.					
Calcomp DrawingSlate II A6	£116	86%	MF47	Calcomp	01734 320032
Superb value for money - just as well made as Wacom's tablets, with a brilliant range of highly usable features.					
Kensington Thinking Mouse	£54	86%	MF47	Mac Accessory	0191 296 1500
Top of the range. Has four buttons (five when front two are pressed together), all fully programmable.					
MacAlly Single-Button Mouse	£18	87%	MF47	Mac Accessory	0191 296 1500
Great value – the sensitive switch requires a super-light touch so lessens finger fatigue. Easy-maintenance design.					
Wacom ArtPad II	£158	90%	MF47	CU	0181 358 5857
MF CLASSIC A little expensive, but the quality is superb and the UltraPen Eraser is simply brilliant.					
Wacom UltraPad A4	£540	85%	MF47	CU	0181 358 5857
Very well made indeed, with the excellent UltraPen Eraser or puck. At the street price of nearer £350, a great buy.					

Office software

Many Macs are used in the office or study with worthwhile applications like word processors, databases and spreadsheets. There are many related productivity applications, too, like personal organisers.

Name	Price	Rating	Reviewed	Contact	Telephone
ClarisImpact 2	£152	86%	MF34	Claris	0181 756 0101
Combines spreadsheet functions with charting, outlining and DTP for the ultimate low-end business presentation suite.					
ClarisWorks 4.0	£152	92%	MF31	Claris	0181 756 0101
MF CLASSIC The Mac's standard all-in-one office suite. Inexpensive yet very powerful in the right hands.					
Excel 5	£220	87%	MF18	Microsoft	0345 002000
The only professional spreadsheet package on the Mac boasts 3D documents and more power than a Saturn 5.					
Expresso 1.0	£20	89%	MF31	Softline	0181 401 1234
Personal organiser that makes up for in charm and value what it lacks in high-powered relational data-handling.					

http://www.futurenet.com

MacWeb
How can I increase my RAM cheaply?
Help! My Mac's crashed! What can I do?
What's the best free source of graphics?
How do I make my own Web site?
What CD-ROM should I buy for my kids?
FilmWeb
Where can I get The Lost World trailer?
When did Tarantino play Elvis?
When is Batman & Robin released?
Will Tom Cruise win Best Actor?
What film made the most money in '96?
MusiciansNET
What does an A flat minor look like?
What's the best TB-303 clone?
How can I play like John Lee Hooker?
How do Erasure produce their sound live?
Where can I buy a new Fender amp?
PCNet
What type of modem would best suit me?
How do I upgrade my PC?
What is the best application software?
Which notebook computer should I buy?
What sound set-up should I get for my PC?
CyclingNet
What's the best entry level bike?
How do I fit Gor-tex cables?
Where are the best trails?
How do I stay fit?
How do I learn to bunny hop?
SFNet
Who shot Scully's sister in the X-Files?
Who stole Babylon 4?
Name the Doctor in the Who TV movie?
Who directed Star Trek:First Contact?
Who directed the smash 12 monkeys?
CRAFTNET
Where's my nearest craft shop?
Who's Jo Verso?
How can I make my cross stitch even?
When is there a craft fair near me?
Where's my nearest Anchor supplier?
FootballNET
How much did Vialli cost Chelsea?
What are John Motson's favourite games?
Who are the great football legends?
Which club is the best in the world?
Where can I buy a Notts Forest strip?
GAMENET
What is DVD?
Which APS is best?
How fast is MMX?
Pro Log & Nicam - what's the difference?
How much is Super Mario 64?
TotalNet
How do I get on to the Internet?
Should I buy a 56kps modem?
Who controls the Internet?
What is Java anyway?
How can I publish my own Web pages?
FoodNet
How do I do flambé?
What can I make with this?
What's the thing you use to sift flour?
What should I do with a quince?
How many grammes are there in an ounce?
TechZONE
What does NTSC stand for?
What is PlayStation's CPU?
What two chips power the Saturn?
Who created Magic: The Gathering?
Who is Shigeru Miyamoto?
ClassicalNet
What does a conductor actually do?
What is classical music anyway?
How exactly do I pronounce Dvorak?
Is there a fan club for José Carreras?
What are the best new CDs to buy?
MangaNet
What is Manga?
What does OAV stand for?
What do the clowns in Akira ride on?
Where is Barefoot Gen set?
When was Akira first published?
TotalCar
What's the mpg of a Lotus Elise?
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What's the cheapest MPV?
What can I test drive today?
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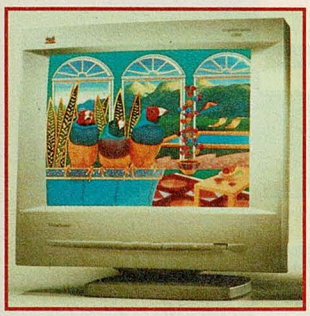
SFX
Total Film

Product news continued

like DTP, graphics and video editing. It has an impressive refresh rate of 85Hz at 1,600 x 1,200 resolution and 99Hz at 1,280 x 1,024. Using ViewSonic's Sonic-Tron technology, the PT813 has a grille pitch of 0.28mm for fine detail, digital controls for easy adjustment, and View-Match™ colour matching. The PT813 will set you back about £1,415.



The **G800 Graphics Monitor** is a bit smaller at 20 inches (18.4 inches viewable), but is also aimed at professional users. For £893, it offers a dot pitch of 0.28mm, a refresh rate of 80Hz at 1,280 x 1,024 pixels and a maximum resolution of 1,600 x 1,280. Like the PT813, it boasts OnView controls and View-Match colour matching, plus an anti-glare, anti-reflective screen.

The **E655** is a budget-priced 15-inch model offering a refresh rate of 81Hz at 1,024 x 768 resolution, OnView control system, a flat square screen with 0.28mm dot pitch and anti-glare, anti-static screen coating, all for just £252. Contact ViewSonic on 0800 833648.

We're on a mission...

Mission to Planet X, a new CD-ROM for children, sends kids on a quest to rescue Star Searcher from Planet X. Along the way, they stop at planets to unlock secrets using Internet-relevant skills honed by solving puzzles and brain-teasers. Activities to try include using e-mail, accessing Web sites and engaging in on-line chats, all without the costs of actually going on-line. Kids can even try creating their own Web pages. *Mission to Planet X* costs £34.95. Contact Edge Publishing on 01844 261770 for more information.

Need a new image?

The Corbis Archive, the world's largest collection of digital images, contains nearly 20 million historical, photographic and fine art images from varied sources including press photo libraries,

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Name	Price	Rating	Reviewed	Contact	Telephone
FileMaker Pro 3.0	£234	96%	MF37	Claris	0181 756 0101
MF CLASSIC An excellent database that's been tweaked and tuned, and is now fully relational.					
Let's KISS	£153	91%	MF41	Softline	0181 401 1234
MF CLASSIC So far ahead of traditional spreadsheet designs you wonder why no-one thought of it sooner.					
Organiser 2	£81	86%	MF46	Claris	0181 756 0101
Able to handle links between information both internally and to the Net – no networking, though.					
Up-to-Date & Contact 3.5	£116	89%	MF31	Now! Software	01525 237001
Dynamically-linked duo of contacts manager and diary. Occasionally a little too complex for its own good.					
Word 6.0.1	£220	92%	MF20	Microsoft	0345 002000
MF CLASSIC The world's favourite word processor has a monumental feature list but a bewildering array of controls.					
WordPerfect 3.51	£194	88%	MF48	Corel	0800 973189
A fully featured word processor that's every bit as powerful as any of its rivals, and friendly with it.					

Internet and comms

These days communications and the Internet are virtually synonymous, and the latest generation of Web browsers handle e-mail, ftp, Usenet and anything else you might want to do on the Net.

Name	Price	Rating	Reviewed	Contact	Telephone
Em@iler	£58	82%	MF42	Claris	0181 756 0101
Neat and attractive e-mail application that handles mailboxes, enclosures and address books painlessly.					
Eudora Pro 3	£75	83%	MF42	Electric Mail	01223 501333
Very powerful e-mail application with a new, friendlier interface that doesn't quite hide some murky technical depths.					
Internet Explorer 3	Free	78%	MF39	Microsoft	0345 002000
Microsoft's browser isn't as good as *Netscape,* but it is free. We reviewed *Internet Explorer 2.*					
Netscape Navigator 3	$49	94%	MF39	Netscape at http://home.netscape.com/	
MF CLASSIC The world's favourite Web browser does everything rather too well for comfort. We reviewed *Netscape 2.0.*					
Snap Mail 2 (5-user pack)	£206	90%	MF42	Softline	0181 401 1234
MF CLASSIC Simple and fun networked e-mail software that requires no administrators or complex set-up procedures.					

Utilities

Whether you want to add features missing from the regular Mac Finder or protect your set-up from System crashes, there's a utility to do the job.

Name	Price	Rating	Reviewed	Contact	Telephone
Conflict Catcher 3	£81	81%	MF29	Softline	0181 401 1234
Automated conflict-catching walk-throughs combine with Extension management that include fonts and start-up items.					
Norton Utilities 3.2	£116	88%	MF42	Symantec	01734 814230
Superficial enhancements to a dated application that's not even PowerMac-native yet. Still market leader... for now.					
Personal Backup	£46	92%	MF29	Softline	0181 401 1234
MF CLASSIC Automated back-up scripts that can run near-invisibly in the background at pre-set times.					
PopupFolder 2.0	£46	87%	MF35	Softline	0181 401 1234
Hierarchical folder menus up to 16 levels deep both in the Finder and in **Find** and **Save** dialogue boxes. Paradise!					
RAM Charger 3.0	£18	93%	MF47	Syncronys	00 1 213 340 4100
MF CLASSIC Frees up megabytes of precious RAM, runs on any Mac, and is compatible with Virtual Memory.					
RAM Doubler 2	£71	92%	MF43	CU	0181 357 5758
MF CLASSIC If you have a modern Mac, *RAM Doubler* is so essential a utility you'll wonder how you coped without it.					

Graphics

From image editing to professional illustration to 3D design and raytracing, here's our pick of the top Macintosh graphics packages.

Name	Price	Rating	Reviewed	Contact	Telephone
Bryce 2	£234	93%	MF38	Principal	01756 704040
MF CLASSIC 3D landscape creation tool that's more versatile than its predecessor and can create indoor scenes too.					
Canvas 5	£469	86%	MF49	Principal	01756 704040
A solid and well-featured all-rounder with image editing, drawing and page layout tools in one package.					
Cinema 4D 4.2	£699	93%	MF50	HiSoft	0500 223660
MF CLASSIC This 3D package offers power, speed and superb results, with features that match any of its rivals.					
CorelDraw 6	£465	91%	MF44	Corel	0800 973189
MF CLASSIC *CorelDraw* is great as long as you have a PowerMac and plenty of RAM and hard disk space.					
Dabbler 2	£59	90%	MF35	CU	0181 358 5857
MF CLASSIC Natural media painting program for those awed by multi-layered dialogues and complex options.					

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Product news continued

museums and private collections. Now you can search (by keyword), browse, preview and even order digital copies of images from the Archive via the Internet, using the **Corbis View** service through *Netscape Navigator 3.01*. You can register to take part in the beta testing of Corbis View for free at **http://www.images.corbis.com/members/** – charges only apply when you order an image. You can find out more from the Corbis Web site at **http://www.corbis.com/** or phone 0171 843 4444.

Stinking thieves!

One of the biggest problems with computer component theft is the difficulty of proving that a recovered item was yours to begin with. Now there's a new "DNA spray" called **Securitrace** that marks any object with a unique blend of chemicals. As little as a pinhead is enough for positive identification by spectrographic analysis – proof of ownership that will stand up in any court in the world. A university used the harmless, indelible spray on its valuable butterfly collection and consequently was able to identify a stolen specimen. "How else would you mark a butterfly?" it commented – or delicate electronic components? Columbus Securitrac offer to mark 1,000 items with your own unique formulation for £1,200, including free spectrographic analysis of recovered property after a theft, or as few as 20 items for £50. Find out more on the Web at **http://www.webcom.com/~thames/guardit/welcome.html** or call 01865 865865 for details.

New Nomai range

Storage media manufacturer Nomai is introducing new **135Mb** and **230Mb magnetic cartridges** guaranteed fully compatible with SyQuest's EZ 135 and EZFlyer 230 drives respectively. The 135Mb variety cost around £14, the 230Mb about £21. In addition, Nomai has extended its optical media range with new **540Mb** and **640Mb MO disks** costing £31 each. Finally, the

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Name	Price	Rating	Reviewed	Contact	Telephone
Detailer	£328	85%	MF46	Principal	01756 704040
Detailer is powerful, fast and satisfies a genuine need for a form of direct 3D image mapping every artist can understand.					
FreeHand 7	£529	82%	MF47	CU	0181 358 5857
A significant improvement on the previous version, this illustration giant is well worth upgrading to.					
Infini-D 3.5	£469	85%	MF42	Gomark	0171 731 7930
3D modelling, rendering and animation package that's easy to use but produces rather crude and mechanical results.					
Kai's Power Goo	£58	90%	MF41	Principal	01756 704040
MF CLASSIC With many professional-level tools, *Goo* might be the best fun you'll have with a graphics package.					
Painter 4	£469	91%	MF35	CU	0181 358 5857
MF CLASSIC Blends traditional painting tools and media with mouse pointers and Bézier curves.					
PhotoDeluxe	£88	85%	MF39	Adobe	0181 606 4000
Innovative and powerful photo manipulation package at a bargain price – if you've got the hardware needed to run it.					
Photoshop 4.0	£635	92%	MF47	Adobe	0181 606 4000
MF CLASSIC The world's most popular image editor gets even better with a careful rethink of existing capabilities.					
Expression	£151.58	90%	MF49	Principal	01756 704040
MF CLASSIC Natural media drawing program won't replace FreeHand, but it's useful, fun and good value.					
3D World 2.0	£116	78%	MF45	Microspot	01622 687771
A powerful, great value, basic 3D package – a good toy and superb learning tool, but nothing more sophisticated.					
xRes 3	£645	91%	MF38	CU	0181 358 5857
MF CLASSIC Heavyweight graphics package aimed at a market beyond *Photoshop*. We reviewed xRes 2.					

Video and animation

Once restricted to profesional studios, video creativty is coming into its own on the Mac, especially as you can now broadcast through the World Wide Web and QuickTime.

Name	Price	Rating	Reviewed	Contact	Telephone
After Effects 3.0	£600	83%	MF45	Adobe	0181 606 6000
Great features make *After Effects* a very cost-effective way to give your movies a professional touch.					
Animation Works	£153	85%	MF26	Gold Disk	01734 814230
Aimed more at youngsters than professionals, but still needs drawing skills and an understanding of cel animation.					
Elastic Reality 1.21	£293	90%	MF26	Softline	0181 401 1234
MF CLASSIC Heavyweight morphing application that's more sophisticated than its cheaper rival *Morph*.					
Final Effects 3	£151	87%	MF45	Principal	01756 704000
The additional cost of *Final Effects* is well worthwhile, as this collection of plug-ins takes After Effects to new heights.					
Morph 2.5	£117	84%	MF26	Softline	0181 401 1234
Powerful and enjoyable morphing program at an affordable price. Easy to use, although lacking in professional features.					
Premiere 4.2	£586	90%	MF21	Adobe	0181 606 4000
MF CLASSIC The pro's choice, this video editing suite offers sophisticated features. We reviewed *Premiere 4.0*.					
PROmotion	£149	80%	MF26	Gomark	0171 731 7930
Animation program for serious or professional users, which requires skill and know-how. Can output to videotape.					

Music and audio

The Macintosh is one of the mainstays of the professional music industry, and boasts a wealth of high-quality software for MIDI, sequencing, scorewriting, sound editing, and direct-to-disk recording.

Name	Price	Rating	Reviewed	Contact	Telephone
Cubase VST 3.02	£329	93%	MF50	Harman Audio	0171 207 5050
MF CLASSIC A highly graphic, high-tech sequencer with a superb range of digital audio features.					
Deck II v2.5	£410	84%	MF38	CU	0181 358 5857
Direct-to-disk recording program that also has many uses for multimedia authors and post-production studios.					
FreeStyle	£149	90%	MF22	Music Track	01462 733310
MF CLASSIC An excellent introduction to sequencing with some powerful and unique features.					
Logic 2.6	£649	92%	MF50	Sound Technology	01462 480000
MF CLASSIC One of the most powerful sequencers around – great for anyone serious about making music.					
MusicTime	£100	90%	MF27	Arbiter	0181 202 1199
MF CLASSIC An excellent budget-priced scorewriter that can use QuickTime's Musical Instruments Extension.					
Overture	£234	90%	MF24	MCM	0171 723 7221
MF CLASSIC Application for converting your MIDI compositions into printed scores in musical notation.					
Session 2	£175	89%	MF33	Digidesign UK	0800 898 331
Affordable direct-to-disk recording program. You miss out on some features, but it's still up to professional use.					
Visual Arranger	£39	90%	MF26	Yamaha	01908 366700
MF CLASSIC MIDI application for those who want to create a lot of music for relatively few musical skills.					

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▶ Mac IIvx	(68030/32)	8/80	£495
▶ Quadra 610	(68040/25)	8/230	£575
▶ Centris 650	(68040/25)	8/230	£635
▶ Quadra 650	(68040/33)	8/230	£675
▶ Quadra 800	(68040/33)	8/230	£695
▶ PowerMac 6100	(PPC 601/60)	8/500	£750

Many people regard the Mac IIci as the peak of evolution of the 68030 Mac II range...Today a still desirable second-hand bargain." - MacFormat January 1997

Internal CD upgrade for VX/Centris/Quadra/PowerMac from £50

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Product news continued

company has also brought out a new recordable CD with a capacity of 74 minutes or 680Mb. The new **680Mb CD-R** is fully compatible with all the CD-writers on the market, and costs £6.80. Contact Computers Unlimited on 0181 358 5858 for a full list of Nomai products or visit the Nomai Web site at **http://www.nomai.fr/**

Hitting historic heights

Maris Multimedia has released the ***Wings Collector's Editions,*** two special edition boxed sets of CD-ROMs detailing military aircraft and aviation from 1915 to the present day. The first, ***Air Combat***, includes *Wings: London Blitz to Pearl Harbor* (previously not released in the UK) and *Wings: Midway to Hiroshima.* The second set, titled ***Air Assault***, includes *Wings: Korea to Vietnam* and *Wings: Saigon to Persian Gulf.* Each title features mini-flight-sims, so you can experience dogfights, bombing and strafing missions yourself, plus 3D models of classic and modern warplanes, full-screen photos, live action video and exhaustive multimedia databases of aviation technology. Each boxed set costs just £34.99. For more details contact Maris Multimedia on 0171 488 1566.

Smile please!

If you're a digital camera enthusiast, you'll be delighted to hear that Agfa is reducing the prices of two popular cameras, making them more affordable for the home user. The **ePhoto 307** is a compact point-and-shoot camera with built-in auto flash. It can store 36 high resolution images at up to 640 x 480 pixels (the size of a typical full-screen computer display, making the ePhoto's pictures handy for urgent on-screen applications such as multimedia or Web pages), or 72 at a standard 320 x 240 pixels. Plus, you'll never have the hassle of buying a film again!

The ePhoto has been cut by £100 to £299 and includes *Adobe PhotoDeluxe.* Armed with this you can cut and paste all or part of your photos, as well as adjust brightness and contrast.

Agfa's professional **ActionCam**

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Publishing and electronic media

Publishing today is about far more than print: you can also produce material as multimedia for CD-ROM or the Web, or use an HTML editor to create Web pages from scratch.

Name	Price	Rating	Reviewed	Contact	Telephone
Astound	£222	91%	MF36	Gold Disk	01734 814230
MF CLASSIC A top presentation tool which makes handling quite complex actions easy.					
Authorware Academic	£150	95%	MF43	Prentice Hall	01442 882266
MF CLASSIC Icon-based multimedia creation at its finest, this power-packed program is for education only.					
BBEdit 4	£112	85%	MF47	Full Moon Software	01628 660242
This Web authoring tool is definitely not for beginners, but it's very powerful in an expert's hands.					
BeyondPress 2.0	£570	85%	MF40	XChange	0171 637 2966
Easy to use *XPress* XTension for converting *XPress* pages into HTML. No support for font tags or frames, though.					
Digital Chisel HTML 2.1	$159	89%	MF36	Pierian Spring	00 1 800 472 8578
Powerful entry-level educational package with a simple interface. We reviewed *Digital Chisel 2.0.*					
Director 5.0	£1,174	85%	MF41	CU	0181 358 5857
A sound upgrade to the industry leader for media authoring, which irons out many shortcomings. It's easier to use, too.					
Director Academic	£46	95%	MF43	Prentice Hall	01442 882266
MF CLASSIC De-facto standard for multimedia creation in a cut-down version – for education only.					
Home Page 1.0	£81	91%	MF47	Claris	0181 756 0101
MF CLASSIC Claris's Web page maker is good for beginners but still offers you room to grow.					
HyperCard 2.3	£95	79%	MF36	Apple	0800 127753
Authoring bundle built uneasily around the ageing *HyperCard.* With it, nothing is impossible, but few things are easy.					
HyperStudio 3.0	£121	88%	MF36	TAG Developments	01474 357350
Practical and powerful tool aimed more at education than multimedia authors per se. More text styling tools are needed.					
PageMaker 6.5	£470	93%	MF50	Adobe	0181 606 4000
MF CLASSIC This DTP heavy-hitter is powerful, flexible and wonderful to design with, but you need a powerful Mac.					
PageMill 2.0	£116	90%	MF47	Adobe	0181 606 4000
MF CLASSIC A powerful, easy-to-use program with excellent support for advanced features like frames.					
QuarkImmedia	£1,169	91%	MF48	XChange	0171 637 2966
MF CLASSIC This XTension for *QuarkXPress* adds easy-to-use multimedia and Internet production features.					
QuarkXPress 3.32	£1,169	88%	MF48	CU	0181 358 5857
The market-leading DTP package costs plenty, but it's robust, powerful and flexible, right up to that final deadline.					
UniQorn 1.01	£1,052	80%	MF40	Principal	01756 704000
QuickDraw GX DTP application that does things *XPress* and *PageMaker* can only dream of. Needs hardware power,					

Multimedia CD-ROMs

The invention of the CD-ROM has created a whole multimedia publishing industry turning out educational, reference and leisure titles by the score.

Name	Price	Rating	Reviewed	Contact	Telephone
ABC of Animals	£40	90%	MF47	Creative Wonders	01753 549442
MF CLASSIC Covering a wide range of animals across the globe, this CD is educational and a well-designed treat.					
Solar System Explorer	£40	83%	MF49	Maris Multimedia	0171 488 1566
Daunting at first, but it soon becomes a thrilling journey around the planets, with you cast as the captain.					
Cinemania 97	£30	92%	MF47	Microsoft	0345 002000
MF CLASSIC If you have a CD-ROM drive, £30 and even the slightest if interests in cinema, this is an essential buy.					
Encarta 96	£50	83%	MF42	Microsoft	0345 002000
Microsoft's definitive multimedia encyclopedia is bang up-to-date, but the Mac implementation is flawed.					
History of the World	£40	89%	MF38	Dorling Kindersley	0171 753 3488
More flashy and inspirational than in-depth and authoritative. Oozes quality, but built for browsing rather than research.					
Makers of the 20th Century	£45	89%	MF41	News Multimedia	01525 852 813
200 personalities of the 20th Century are examined and explained in a well-presented and often intriguing CD.					
Music Central 97	£30	85%	MF47	Microsoft	0345 002000
A well-researched and thorough delve into the world of popular music, even if some of the entries do seem quite obscure.					
The Mystery of Magritte	£40	90%	MF46	MIP	0171 881 8000
MF CLASSIC A radical look at one of the world's greatest artists. It'll make you question your very existence.					
Picasso	£40	88%	MF46	Grolier Interactive	01865 264000
An educational and entertaining trawl through the life and works of one of the world's greatest artists.					
RedShift 2	£50	92%	MF32	Maris Multimedia	0171 488 1566
MF CLASSIC Restrained but magnificent exploration of the universe using sound astronomic principles.					
The Way Things Work 2.0	£40	88%	MF45	Dorling Kindersley	0171 753 3488
Full of clear explanations and plenty of fun. Kids will find this easy to use, and can learn at their own pace.					
World Reference Atlas	£50	90%	MF37	Dorling Kindersley	0171 753 3488
MF CLASSIC Bestrides the Earth like a colossus, giving you the information you need, when you need it.					

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Product news continued

digital camera has been reduced by £1,500 to £4,106. It is based on the Minolta 35mm camera and is capable of very high resolution at 1,528 x 1,148 pixels, records a frame in just 2.5 seconds and comes with additional *FotoTune* software, enabling full colour management of your captured images, including editing colour, elimnating "red eye" and other problems. For more information, contact Agfa on 0181 231 4120 or visit its Web site at **http://www.agfahome.com/**

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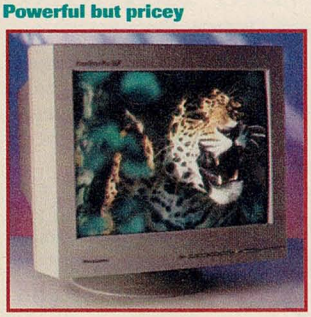

Panasonic has announced a top-of-the-range 21-inch monitor, the **Pana-Sync/Pro 7GX,** for £2,172, boasting an impressive maximum resolution of 1,600 x 1,200 with a refresh rate of 90Hz or greater. The 7GX has auto-focussing circuitry and a dot pitch of just 0.25mm, plus proprietary anti-glare coating, a high-contrast screen and button-controlled on-screen adjust-ment to make those long sessions at work more pleasant. Contact Panasonic on 0500 404041 or visit the Web site at **http://www.panasonic.co.uk/**

Professional printing

ClickBook is a new printing utility that enables you to produce double-sided brochures or leaflets at a low cost. Compatible with any laser or inkjet printer, it helps you produce custom-ised booklets, manuals, greetings cards or magazines. *ClickBook* intercepts your standard-sized pages as you "print" them, combines them, shrinks them down and then rearranges and paginates them automatically so they print out as a professional double-sided document. It's available for an introductory price of just £35 on a 3.5-inch disk or CD-ROM. Contact Fore-Front on 0181 387 4011 or visit the Web site at **http://www.ffg.co.uk/**

Funky new fonts

Fed up with the same old fonts? Take a look at **[T-26]**, a collection of original, innovative, abstract and eclectic fonts from around the world, including Carlos Segura's "Neo" and fonts with names like "Boxspring & Mattress", "Deadbugs", "Eekers", "Inspector Clouseau" and "Roughedge". [T-26] is a lively library of fonts that's sure to add variety and spice to your work. Prices vary according to the number of fonts you buy, but they start from as little as £29. For a catalogue or more details of the [T-26] collection, contact Font-Works on 0171 490 5390.

Multimedia for kids

How do you keep the kids entertained on a wet Sunday afternoon in November? Multimedia CD-ROMs for kids can entertain, occupy and educate all at the same time.

Name	Price	Rating	Reviewed	Contact	Telephone
Adiboo	£28	95%	MF46	Sierra	0118 920 9100
MF CLASSIC A fantastic learning adventure, packed full of activities and fun, keeping your kids fascinated for hours.					
Adventures of Peter Rabbit	£30	88%	MF43	Mindscape	01444 246333
A rare and challenging adventure game which will educate and captivate your kids.					
Counterfeit Collaborator	£28	90%	MF35	Sierra	0118 920 9100
MF CLASSIC A genuinely intriguing mystery forms the heart of this Playtoon CD.					
Darby the Dragon	£20	89%	MF44	Brøderbund	01429 273029
A rare and challenging adventure game which will educate and captivate your kids.					
The Greatest Toyshop on Earth	£30	88%	MF32	Omnimedia	0181 974 6766
A brilliantly entertaining set of kids' toys in a comfortingly British environment. Something to keep coming back to.					
KidWorks Deluxe	£35	88%	MF43	ABLAC	01626 332233
An excellent package which encourages children to get involved in all aspects of story-making.					
Logical Journey of the Zoombinis	£30	96%	MF41	Brøderbund	01429 273029
MF CLASSIC A well-designed course in mathematical logic for kids that's disguised as a superb-looking and fun game.					
Maths Workshop	£30	90%	MF41	Brøderbund	01429 273029
MF CLASSIC Teaches maths in the broadest possible sense, with wonderful-looking activities and a good manual.					
My First Amazing World Explorer	£30	89%	MF41	Dorling Kindersley	0171 753 3488
Interactive atlas that's pitched at just the right level for younger children, showing the world as a diverse and living thing.					
The Time Warp of Dr Brain	£28	90%	MF50	Sierra	0118 920 9100
MF CLASSIC Insane, hilarious and educational, this is a gripping piece of multimedia.					
Uncle Archibald	£28	90%	MF35	Sierra	0118 920 9100
MF CLASSIC Another excellent Playtoon about imaginary monsters that come to life. Slapstick chaos is the result.					
Word Stuff	£20	85%	MF39	Eidos Interactive	0121 606 1800
Teaches English and explains various everyday situations. An excellent blend of entertainment and real educational value.					

Games

As a games machine, the Macintosh rivals both the PC and the plethora of whizz-bang games consoles flooding the market. The best games tend to be those that involve brains as well as reflexes.

Name	Price	Rating	Reviewed	Contact	Telephone
Actua Soccer	£40	90%	MF46	Gremlin	0114 275 3423
MF CLASSIC A beautiful game about the beautiful game, and a superb debut performance for football on the Mac.					
Apache Longbow	£45	92%	MF41	Digital Integration	01276 684959
MF CLASSIC 3D Gouraud-shaded flight sim with real class and some fairly hefty hardware requirements.					
Caesar II	£35	85%	MF48	Sierra	0118 920 9100
An excellent, finely balanced *SimCity*-style title – absorbing and beautiful.					
Close Combat	£45	89%	MF48	Microsoft	0345 002000
A realistic war game with elements that will appeal to both tacticians and action junkies alike.					
HIND	£45	88%	MF49	Digital Integration	01276 684959
This companion to Apache Longbow puts you in control of a Russian craft – a solid and engaging flight sim.					
Day of the Tentacle	£40	94%	MF33	Virgin Int. Ent.	0171 368 2266
MF CLASSIC You'll love it. You'll hate it. It's funny, it's involving and the cartoons are quite superb.					
Doom 2: Hell on Earth	£45	90%	MF31	Virgin Int. Ent.	0171 368 2266
MF CLASSIC The blood-spattered violence *Doom* is famous for hides some quite involving puzzle-solving.					
F/A-18 Hornet 2	£69	93%	MF36	Softline	0181 401 1234
MF CLASSIC Realistic, absorbing and fun – an instant classic with imaginative and interesting missions.					
IndyCar Racing II	£17	94%	MF42	Sierra	0118 920 9100
MF CLASSIC Spectacular simulation at its finest, and at a real bargain price. Stunning graphics and attention to detail.					
Marathon 2	£65	95%	MF35	Softline	0181 401 1234
MF CLASSIC A huge game task, addictive gameplay and excellent graphics and sound. What more could you ask for?					
MechWarrior 2	£50	89%	MF43	Activision	0181 742 9400
The controls take some getting used to, but *MechWarrior 2* is too addictive to let that worry you for long.					
Pro Pinball: The Web	£35	90%	MF44	Empire	0181 343 7337
MF CLASSIC The finest pinball simulator ever (full stop).					
WarCraft II	£45	93%	MF45	ZABLAC	01626 332233
MF CLASSIC A delight to look at and, in multi-player mode, as near to perfect as a game of this type has come.					
Weekend Warrior	$39	85%	MF50	Bungie	00 1 312 563 6200
Astonishing game-show violence, but you'll need a 3D graphics card and a PowerMac to use it.					
Worms	£30	89%	MF45	Team 17	01924 271637
Simple concept with almost endless tactical possibilities. Great multi-player game but let down by a clumsy interface.					

If your Mac falls off the back of a lorry, are you covered?

Home business equipment is rarely covered by standard household insurance, and the knock-on effects of a serious loss (like interruption of income) most definitely are not. Sadly, there are plenty of nasty characters who don't care about *that*. So you really should make sure your Mac and other equipment is protected against theft, loss or damage – at home, or when you're out and about with Powerbook and mobile phone. But the right cover can be difficult to find and expensive to arrange – unless you consult the specialists. We have developed the HOME-OFFICE policy specifically for those who work from home. Underwritten by Commercial Union, it has the flexibility to meet all your needs – which means you pay *only* for the cover you really want. And because we understand the very real importance of keeping you up and running, we aim to settle every claim *fast*. So why not telephone our Hotline today?

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allowing the user to match and specify colours in the CMYK percentages. Colour samples from non-CMYK (special colours) or colours from a computer screen, are misleading. Overcome this by using 'The Tint File'. Select your colours at the outset by referring to the litho-printed 'Tint File' and the problems involved in colour specification will just go away! It is possible to accurately input percentages of CMYK and know what the litho result will be. Due to its unique design, you can easily match or choose any practical colour with the supplied colour selectors in seconds from the full range of CMYK. Any single - two - three - or - four colour percentage combination, including the Black, is illustrated from 5%-100%. Produced to high specification, with 28 pages plus cover, briefcase sized, measuring 345 x 250 mm, 'The Tint File' sets a standard for Publishers, Designers, Repro houses, Printers etc. U K R.R.P. £75.00

'TintMatch'™ Software,

allows you to reproduce Cyan, Yellow, Magenta combinations on your own house equipment as illustrated in 'The Tint File'. The software comes with four Litho printed Colour Wheels to calibrate your results. U. K. Rec. Retail Price £49.95 or purchase both for £99.95 plus VAT where applicable (£106.07 inc. VAT). For more information or to order 'The Tint File' or 'TintMatch' or both, Tel / Fax: 01222 708648 Internet: http://www.netwales.co.uk/tintfile or write to: Tintmaster Publications 'Windrush', Sully Rd. Penarth, Cardiff, CF64 2TQ.

Upgrade to the full PageStream 3.3

If you were impressed with *PageStream 3.2SE* and want to upgrade to v3.3, then this is an offer that you can't refuse...

The exclusive "Special Edition" version of SoftLogik's amazing new Mac DTP program *PageStream 3.2* on MACFORMAT 49's bonus Cover CD includes all the functions you need for everyday DTP tasks, and gives you the full flavour of the powerful features of this impressive program.

Several of *PageStream's* functions go beyond those of the industry-standard DTP giants. *PageStream* offers a configurable toolbar, zoom-in up to a staggering 3,000%, multiple undo's, text wrap on both sides of an object, superb drawing and object-creation tools, some of the most gorgeous "fill pattern" capabilities you'll ever see in a DTP program, and much more. All these are fully usable in the "SE" version that was yours with MACFORMAT 49.

Upgrade to *PageStream 3.3*, and you too can produce some stunning work with this fantastic DTP package.

However, some "professional-level" and specialised features have been removed – notably, AutoSave and Auto-Backup, Save as Template, Document/Chapter Setup, Color Separations and Pantone Color Libraries, and certain text styling capabilities and text wrap options.

If you like *PageStream* and want all of these superb features – as well as much more – you can upgrade to the very latest version, *PageStream 3.3*, with a full manual and all features enabled, for a very special price through MACFORMAT.

What you get

PageStream 3.3 boasts all the features of v3.2SE, *plus*

- Save as Template function
- Facing Pages option
- Revision History
- Thumbnails output
- Complete Colour Separations (both process and spot colours)
- Plate Control
- Auto Drop Caps and Bulleted Paragraphs
- Smart Quotes/Dashes/Bullets
- Leading mode adjustment
- Auto Ligatures
- Custom Type Styles (custom outline, shadow, reverse, etc)
- External Graphics
- Non-square Text Frames
- Fully configurable tool defaults
- An invaluable Eyedropper tool for picking up attributes from objects and applying them automatically to other objects

... plus much, much more.

PageStream 3.3* is the affordable, easy-to-use, yet professional strength, DTP package without the heavy-weight price-tag. As a MACFORMAT reader, you can upgrade to *PageStream 3.3* for just £99 + VAT, *including delivery* in the UK and Europe – an amazing £116.35 inc VAT, delivered to your door!

Also available

To enhance *PageStream*, SoftLogik is also making available a range of exciting add-ons that will work with either 3.2SE or 3.3, available to you at special prices too:

TextFX 2. How often have you wished you could put text on a curve and distort it inside shapes, without having to take it out to *FreeHand?* The *TextFX 2* extension for *PageStream* gives you everything you need. It has a simple interface, including over 80 ready-made shapes and 30 curves to choose from, as well as any you define! *(TextFX requires Adobe Type Manager and PostScript fonts)*

TextFX 2: £30.95 inc delivery and VAT (US$50 direct).
Order code MFPSFX

Borders. Add a whole new tool to *PageStream* – just select it and draw a decorative border! The border patterns you get are professionally designed vector illustrations, so they look great at any size. Their "weight" (thickness) and colour are fully adjustable too – ideal for posters, coupons, certificates, or just for fun on any type of document!

Borders vol 1 ("Basic Borders" – 60 borders including geometric, coupon, map & symbol designs): £25.95 inc delivery and VAT (US$40 direct).
Order code MFPSB1

Borders vol 2 ("Geo Borders" – a further 60 decorative borders, including classical and music designs): £25.95 inc delivery and VAT (US$40 direct).
Order code MFPSB2

***Save £16!* Buy both sets of Borders for £35.95 inc delivery and VAT (US$60 direct).**
Order code MFPS02

Gary's Effects. Nine effects filters are included as standard with *PageStream*. This set adds another 12, ranging from Solarize, Blur and Equalize to the totally configurable "Convolve", which includes handy pre-sets for Gaussian Blur, Laplacian Edge Enhancement and many more besides!

Gary's Effects: just £17.95 inc delivery and VAT (US$25 direct).
Order code MFPS03

How to order

That's right – as a MACFORMAT reader, you can order *PageStream 3.3* for just £99 + VAT, *including delivery* in the UK and EC – an amazing £116.35 inc VAT, delivered to your door!*

Use the order form on page 142, specifying PageStream upgrade, order code MFPS01 (or the appropriate order code or codes for the *PageStream* add-ons listed above).

Alternatively, phone our reader order hotline, 01225 822511 (9am – 6pm).

Readers outside the UK and EC: contact us before you order for details of delivery charges – phone +44 1225 822511, fax +44 1225 822523, or e-mail subs@futurenet.co.uk.
Or if you prefer, contact SoftLogik Publishing Corporation at 315 Consort Drive, St Louis, MO 63011, USA.
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Fax: 314-256-7773
Web site: www.softlogik.com
E-mail: sales@softlogik.com
AOL: keyword SoftLogik
Mention MACFORMAT and the *PageStream 3.3* upgrade will cost you only US$150 direct from SoftLogik.

All the offers on this page expire on 30 June 1997.
***Delivery included to UK and EC addresses. Overseas readers, contact us for delivery charges, or call SoftLogik in the US direct. *PageStream 3.3* will be mailed to you complete with printed manual, but without bulky, wasteful packaging. Orders will be despatched as soon as we receive stocks of the manual – please allow 28 days for delivery.**

Free reader ads

Buy, sell and swap your Mac hardware and software in the biggest and best Mac marketplace – it's all here!

Hardware for sale

■ **PowerBook 140, 6/40,** Apple carry case, power adaptor, mouse – £400. Chris ☎ 01723 373060

■ **Performa 630 CD/TV, 20/500,** 15-inch monitor, keyboard, mouse and joystick. Some software, StyleWriter 2500 colour printer, 15 months warranty, excellent condition – £1,100. ☎ 01277 624180

■ **PowerMac Performa 5200/75,** 8/500/4x CD, 256K L2 cache, 1Mb VRAM, 15-inch Multiscan monitor, extended keyboard, mouse, manuals, start-up CD, much software, incl. *ClarisWorks 3* – £1,000 ono. Richard ☎ 01953 602704 (after 6pm)

■ **Performa 6200, 24/800,** keyboard, modem, disc drive, 15-inch Sony Trinitron monitor, software, plus sequencer, under guarantee, boxed, as new – £1,195. Essex ☎ 01708 223345

■ **CalComp Colour Master Plus 6613 colour printer,** includes ribbons, paper and software for both Mac and PC – £600 ono. Nigel or Robbie ☎ 0181 956 5085

■ **Newton MessagePad connection kit,** two sets of rechargeable batteries, plus recharger, MessagePad modem, leather carrycase. All excellent condition – £95 the lot. Chris ☎ 01420 476764

■ **PowerBook 5300C, 8/500,** high quality colour display, 100MHz PowerPC processor, one year old, excellent. Was £2,700, sell for £1,950 ono. Southampton, David ☎ 01703 473450

■ **PowerMac 8100/80 AV, 16/500 CD-ROM –** £1,200. 17-inch Apple Multiscan also available. ☎ 0171 937 8636

■ **GCC SelectPress 600 laser printer,** additional paper tray, spare toners, good condition, medium usage – £1,350 ono. Internal DAT drives, two d2/Sony 5200 drives – £320 each (cost £850). Excellent condition, boxed with tapes, software, cables. Julian ☎ 0116 246 1424 (day) or 01827 717521 (eves)

■ **8Mb 72-pin SIMM –** £25 includes postage, selling due to upgrade. ☎ 0421 587034 or e-mail: ps5al@herts.ac.uk

■ **Power PC 7100/80AV, 24/1Gb,** 32K cache, 256 cache level 2, Apple audio-video digitizer card – only £1,400. Carmelo ☎ 0181 540 1052 or e-mail: cmanganaro@cygnet.co.uk

■ **NEC SuperScript 3000 A4 dye sub and variant printer,** PC and Mac, 12Mb RAM, paper and ribbons – £700. Wrexham ☎ 01978 752114

■ **Mac Plus,** complete with keyboard and mouse etc – £75. Performa 630, 8/350, System 7.5.5, with new, un-used 14-inch Multiscan monitor, keyboard and new mouse. Only 110 hours use – £750. Mac Classic 4/11 complete with keyboard and mouse etc. £100. ☎ 01582 570167 (after 6pm)

■ **StyleWriter 1200,** PaperPort VX with *Cardscan* and *Picture Works,* both boxed, little use, £85 & £185 respectively. Essex, Nr M25, Bill ☎ 01708 22345

■ **PowerMac 7200/90, 16/500,** 4x speed CD-ROM, Apple extended keyboard, cables and manuals, excellent bargain – £1,300. Giles ☎ 0116 247 1111

■ **ImageWriter II,** dot matrix printer, inc. three new black ribbons and one colour ribbon. All manuals and cables, very good condition – £55. Anglesea ☎ 01248 421251

■ **PowerMac 7100/66, 24/350,** Sony 15-inch Multiscan, millions of colours, E2 drive and cartridges, US Robotics, 28.8 modem, Apple ext. 2x speed CD, loads of software – £1,700. Paul ☎ 0171 393 6274 (days) or 0181 806 27771 (nights)

■ **Quadra 610 20/160.** 512K VRAM, System 7.5, 14-inch colour monitor, PowerCD, all cables, loaded with software – £725 ovno. ☎ 0171 267 9014

■ **Performa 630 CD, 20/250,** 15-inch Multiscan monitor, mouse, keyboard, all original software, disks, mint condition – £800. Andover ☎ 01264 361275 (Mon-Thurs evenings)

■ **Brand new Mac&fax 28.8 modem,** un-opened – £100. Simon ☎ 0151 670 1115 or e-mail: simon.jones@netmatters.co.uk

■ **Performa 450, 4/250,** Apple Trinitron 14-inch monitor, StyleWriter II, Max VRAM, keyboard, mouse, all manuals, absolute mint condition. Light home use only, software bundle – £650 ovno. ☎ 0151 928 4330 (eves only)

■ **PowerBook 190, 16/500,** excellent condition, under warranty, many extras – only £1,000 ono. Nick ☎ 01223 277518 or e-mail: nick@vellum.co.uk

■ **Macintosh Centris, 660AV, 20/1Gb,** colour monitor, keyboard and mouse – £675. Duo 230 with power adaptor – £275. Newton 100 complete, boxed – £65. ☎ 01480 300409

■ **32Mb 72-pin SIMM,** surplus RAM, gift at £65. Ian ☎ or fax 01354 655284

■ **StyleWriter II inkjet printer,** new condition – £80. ☎ 01333 423084 (after 4.30pm weekdays – weekends anytime)

■ **SE/30 8/40,** carrying case, dust covers with StyleWriter 1200, still under warranty. Quality software installed – £330. Hard disk 100Mb, un-used – £35. York, Mike ☎ 01347 810685

■ **Motorola 3400 modem –** £100. Deal, Paul ☎ 01304 373958

■ **Performa 475/CPU, 8/250,** 1Mb VRAM (1000s colours), System 7.5 and more – £350. ☎ or fax 0161 220 9743

■ **Performa 6200CD 24/500** Internet ready, pre-loaded with *QuarkXPress, Photoshop, Illustrator,* includes colour StyleWriter 1500 printer, many other CD-ROMs – £1,500. Karl ☎ 01353 698264

■ **Personal LaserWriter 320,** PostScript Level 2, 4PPM, new toner cartridge, little used – £400 ono. 4Mb, 72-pin, 70ns SIMM – £10. 8Mb, 72-pin 60ns SIMM – £17. ☎ 01524 770753

■ **Mac IIci 8/500,** System 7.1, keyboard, mouse – £300. Dynatek 4x speed CD-ROM, plus software cables – £200 ono. Jim ☎ 01343 842283

■ **Apple Macintosh 13-inch colour monitor,** good condition, hardly used, complete with cables – £160. W Sussex ☎ 01903 762846

■ **32Mb, 168pin, 3.3v DIMM,** snip at £75. Ian ☎ or fax 01354 655284

■ **Mac Performa 630,** plus TV/V, CD, floppy, Apple Multiscan 15-inch colour monitor, keyboard, mouse and big bundle of software. Complete with all manuals, boxed and hardly used. Excellent value – £800 ono. Kwiz ☎ 0171 482 0613

■ **Perform 630CD, 12/250,** joystick, colour inkjet, *MS-Office,* various CDs, multimedia speakers, internal 14.4Kbps modem – £750. ☎ 01962 854950

■ **Colour Classic 4/80,** System 7.5.3, excellent Mac – £500. Gordon ☎ 01772 252444 (days) or 01704 547996 (eves)

■ **Nikon CoolScan LS,** 10E, 35mm neg scanner for Apple Mac. Mint condition – £500. ☎ 01209 612043 (days only)

■ **Mac LC 10/80,** 512K VRAM, System 7.5.2 with cables and manuals. Very good condition – £300. Apple CD300 2x speed CD-ROM drive – £50. Bracknell, Mark or Pauline ☎ 01344 424766

■ **8Mb 72-pin SIMM,** bargain at £40. Only one month old. Kent, Steve ☎ 01622 201323

■ **PowerBook Duo 230, 12/80,** excellent condition, Global Village Gold 14.4Kbps, carry case – £400. ☎ 0181 332 6417 (eves)

■ **Performa 600, 8/80 CD-ROM,** *Cubase, Digidesign Audiomedia II, Soundesigner II, ClarisWorks 3,* colour monitor, keyboard – £1,100. Chris ☎ 01296 386043

■ **Performa 400,** colour monitor, keyboard, mouse, *RAM Doubler, Brushstrokes, ClarisWorks.* Home use only. Excellent condition – £275. ☎ 01299 270076 (after 6pm)

■ **IIci 32/1Gb,** cache card, System 7.5.3, Apple 14-inch Trinitron monitor, external CD, extended keyboard, colour One-Scanner – £950. ☎ 0181 680 1360

■ **PowerMac 6100/60, 8/250,** 14-inch colour monitor, 4x speed CD-ROM, various pieces of software and games. Magazines and CDs also available. James ☎ 01359 259408

■ **PowerBook 190cs 16/500** with portable external CD-ROM drive and loads of software, includes terminator, all cables, adaptors etc, System 7.5.3 – £1,300 ono. Tom ☎ 0181 749 3365 (eves)

■ **Apple Mac LC475 8/250,** keyboard, mouse, StyleWriter II printer, 14-inch colour monitor, black & white scanner (no software) – £800. Herts, ☎ Amanda 01438 861015

■ StyleWriter II and 4Mb, 72-pin SIMM – sell for £60 or swap (eg. 16Mb SIMM) – will split. Dorset, Andy ☎ 01202 623335

■ **Mac IIsi 9/350,** extended Apple keyboard, Apple monitor and mouse, System software – £375. Marcus ☎ 01752 601005

■ **8Mb 72pin SIMMs –** £20. Peter ☎ 01203 714997

■ **Printers:** StyleWriter, b/w, 360dpi – £60, HP DeskJet 320 b/w & colour – £75, manuals, latest drivers, 8Mb SIMMs – £25. ☎ 01403 752559 (eves)

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User groups

User groups are more or less informal clubs of people with a common interest – in this case, the Mac. If you don't have any Mac-owning friends, they are a great source of information, advice and help. Some groups simply meet every now and again; others are more structured and may even publish regular newsletters.

This listing is a free service for amateur, non-profit-making Mac user groups. MACFORMAT does not endorse or recommend any group and cannot be held responsible for any problems you might suffer as a result of contacting any of the groups listed here.

UK User Group Council list

The UK User Group Council maintains a list of the Mac user groups which have registered with it. If you wish to contact the council, call John McKnight on 0181 314 1753.

Local groups

■ **Aston University Mac UG**: Birmingham area. Contact Ray Tier on 0121 359 3611

■ **Berkshire Mac UG**: contact Ian Burn on 01734 813

■ **Blackburn Mac UG**: contact Roger Moreton on 01254 670043

■ **Cambridge Apple UG**: contact Ian Archibald on 01223 311157

■ **Cancer Research/RMH UG**: contact Raymond Henry on 0181 643 8901

■ **Cumbria Mac user group**: Monthly meetings, newsletter, training (at reasonable rates). Call Linda Linsell, 01229 828422 or send SAE c/o 10 Athol Street, Barrow-in-Furness, Cumbria LA14 2QT.

■ **Gateway UG**: Norfolk area. Contact Verne Anderson on 01638 513000

■ **Glasgow Mac UG**: contact Stephen Broadfoot on 0141 339 6646

■ **London Mac UG**: contact John McKnight on 0181 314 1753

■ **Mac Assist**: Cardiff and district. Contact Nigel Arrighi on 01222 224682

■ **Midapple**: West Midlands. Contact William Watson on 01384 277921

■ **Midland Mac UG**: Worcestershire. Contact Ivan Knezovich on 01299 402631

■ **North West Apple CC**: contact George Evans on 01270 583714

■ **Norwich Mac UG**: Dave Gudgeon on 01508 492938

■ **Nottingham Mac UG**: contact David Nicholson-Cole on 0115 945 5077 or 0115 945 5444

■ **Poole Mac UG**: contact Bob Lister on 01202 684441

■ **S E Essex Mac UG**: contact Michael Foy on 01702 468062

■ **Southern Mac UG**: Salisbury area. contact Roger Ford on 01722 780102

■ **Southwest Mac UG**: contact John Elver on 01272 693119

■ **Staffordshire Poly Mac UG**: contact Mark Stiles on 01785 52331

■ **Sussex UG**: Hastings & E Sussex.

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User groups continued

Contact Garry Nevin on 01424 714110

■ **West Midlands UG**: contact Danny Torbica on 01902 336172

■ **Yorks & Humberside Mac UG**: contact David Vardy on 01423 358853

Thematic user groups

■ **BAPC (Printers)**: contact Derek House on 01228 513621

■ **Christian Mac UG**: contact Paul Wareing on 01789 490153

■ **Corel Draw UG**: contact Jill Foster on 01509 415101 or 01509 620442

■ **Developers UG**: contact John French on 01895 672654

■ **HebreWare**: contact Mendy Scharf on 0181 802 6143

■ **Helix UG**: contact John Sandell on 01763 273379

■ **Independent School UG**: contact Ian Carter on 01252 512151

■ **LAW Mac UG**: contact Charles Christian on 01379 88518

■ **Lisa Users Group UK**: contact Sheila Bell on 01367 710453

■ **MacBaud**: call 01685 58027

■ **MacLaw**: contact Nicholas McFarlane-Watt on 01865 784777

■ **Medical UG**: contact Keith Davey on 01836 348284

■ **Microsoft UG**: contact 'Enquiries' on 01252 834995

■ **Multimedia UG**: contact Richard Hurley on 01273 834588

■ **Newton MessagePad West Yorks User Group**: David on 0113 278 0691

■ **PageMaker UG**: contact David Foster on 01509 415101

■ **QUAD Club (*QuarkXPress*)**: contact Philip Caplan on 0181 523 4233

■ **School Mac**: Gloucestershire. Contact Bill Henley on 01453 825422

■ **School Mac UG**: Cambridge. Contact Derek Smith on 01945 584146

■ **Special Needs UG (SNUG)**: contact Geoff Hughes on 01744 24608

■ **The British IIGS UG**: contact Peter Stark on 01223 838231

■ **Young Mac**: call 01795 535472

Others

Advertise your user group here. It need not be registered, but must be a non-commercial user group – just send us your full details and we'll do the rest.

■ **AppleEye BBS** (A FirstClass BBS) Modem numbers: 01234 822180 or 01234 826025. Address: PO Box 162, Oakley, Bedfordshire, MK43 7PA.

■ **Artists archive and news service:** contact The Research Station on 0181 778 6547 (24 hours) 38.4bps plus Web site at **http://www.metamute.co.uk/**

■ **Avid Mac user**, 14 year-old, would like to start user group with other teenagers in Hampshire and Surrey. Contact Kyle Alexander Productions "KAP". Call 01252 24207

■ **MacLin, E-lans MUG**: for info call +46 (0) 141 220330 or e-mail: omar@motala.mail.telia.com

■ **MacHelp**: non-profit helpbank for all Mac problems. Write to : MacHelp – Hermelynster 10, B2610, Wilryk, Belgium.

■ **LC475 4/80**, System 7.1, 14-inch Trinitron monitor, designer keyboard, mouse, *ClarisWorks 3.0*, boxed, manuals. Very good condition – £400. Central Scotland, ☎ 01877 387270

■ **Duo PowerBook 250 12/230,** excellent condition, internal modem, software – £370 for quick sale. Marcia ☎ 01737 554678

■ **Apple Mac SE** 4Mb RAM, 40Mb external HDD, double internal FDD, *Microsoft Word 5, ClarisWorks, QuarkXPress,* ideal beginners machine – £120. NW London ☎ 0181 965 8105

■ **d2 Xe CD-ROM drive** – £130. Apple 14-inch Performa Plus monitor – £110 ono. Both excellent condition, original box, manuals, cables. Manchester, Desmond ☎ 0973 257998 (after 6pm)

■ **SE/30 14/40** with keyboard, mouse – £275. LC 10/40 with Apple 14-inch colour monitor, keyboard, mouse – £300. Cumbria ☎ 01946 822015

■ **Performa 5320 24Mb/1.2Gb**, modem, lots of software – £800. Kamil ☎ 0171 373 5683

■ **Mac SE,** Newlife Accelerator, 68030 processor. Maths coprocessor, 4Mb RAM, 105Mb HD, 800K floppy. Upgraded keyboard, complete works – perfect – £250. ☎ 0161 281 6591 (eves)

■ **Apple PowerBook 145 4/40** – £345. Apple PowerBook 165c, 12/320 colour – £575. Slough, Brian ☎ 01753 643309

■ **PowerMac 7200/90, 500 CD,** Sony 15-inch SFII Trinitron display, Apple keyboard II, Apple speakers, StyleWriter II, loads of software. Mint condition, bargain – £1,600. Tim ☎ 01689 896893

■ **PowerBook Duo 250, 12/200,** active matrix screen, Express modem, DuoDock II, keyboard, mouse – £497. Choice of three units – will split. Mike ☎ 0181 763 8882 or 0181 686 6283

■ **Quadra 630, CD 20/1Gb.** 28.8 Apple internal modem, Apple Trinitron 14-inch monitor – £900. DeskWriter colour printer – £90. Glasgow ☎ 01360 310030 (after 7pm)

■ **PowerBook 5300 16/500,** spare battery, video and SCSI adaptors, System 7.5.5 included – £1,080. ☎ 0121 444 4983

■ **LC475 8/160,** full VRAM, monitor, keyboard etc. Very good condition, boxed – £400. ☎ 01670 823390

■ **PowerBook 5300C 16/750** with carry case, boxed, as new – £1,250. PowerMac 7100/80 16/700/CD with AppleDesign keyboard, boxed, as new – £750. Herts ☎ 01923 775537

■ **Modems** – three, new, boxed and unused. Global Communications 33.6 kbps modems, including Internet Connection Kit and Global Fax software – £100 each. Monitors – three, new, boxed and unused – Power Computing 15-inch monitors – £200 each. ☎ 0171 808 8905

■ **Mac IIci 8/160,** 13-inch RGB monitor, 4x speed CD drive, StyleWriter, keyboard, mouse – £450. ☎ 01603 225024 (days) or 01603 665450 (eves) or e-mail: glen@warmi.demon.co.uk

■ **Macintosh LCIII 12/80,** 14-inch colour monitor, keyboard, mouse, 4x speed CD, HP colour printer, all software, *Photoshop, ClarisWorks* etc, all manuals, boxed, home use – £650. ☎ 01257 272737

■ **Performa 6200 CD 75/500,** 64Mb (Kingston) RAM, TV/video card, keyboard, mouse, one year old – £1,150. 14-inch Apple multiscan £150 extra. ☎ 01273 681962

■ **Performa 630 series TV board** (only) – £50. Sue/Hiro ☎ 01373 864578

■ **Mac II 8/80,** stacked keyboard, mouse with Apple A4 portait monitor, all leads included, various software – £385. ImageWriter printer – £75. All very good condition. ☎ 01663 735142

■ **Mac 72-pin SIMMs,** 4Mb – £15 including recorded delivery. Milton Keynes area, Owain ☎ 01908 233716 (eves) or e-mail: o.george@ukonline.co.uk

■ **HP DeskWriter 540,** excellent condition – £125. External 2 x speed CD-ROM – £60. Both complete with all cables, manuals, software etc. ☎ 0181 673 2414

■ **Macintosh 72-pin SIMM,** two 8Mb – £25 each including registered delivery. Rob ☎ 01454 7722497

■ **Performa 6200/75 CD-ROM,** modem, TV/video card, 14-inch monitor, keyboard, mouse, microphone, 8Mb RAM – also StyleWriter inkjet printer 1200 included, original software – £1,200 ono. Jim ☎ 01895 814862

■ **PowerBook Duo 230** – £490. Colour OneScanner – £160. QuickTake 150 – £260. All in good condition with boxes and manuals. Peter ☎ 01628 474026

■ **Performa 600 8/80 CD,** monitor, mouse, keyboard, Steinberg *Cubase, DigiDesign, AudioMedia II, Sound Designer II,* 1Gb external drive, *ClarisWorks, Filemaker* – £1,100 ono. ☎ 01296 386043

■ **LC 10/160,** 12-inch colour monitor, keyboard, new mouse, System 7 – £430 ono. London SW3, ☎ 0171 589 8636

■ **Performa 460, 12Mb,** monitor, keyboard, mouse, StyleWriter II, CD drive, *Office 3.1* (boxed), *History* CD, *Encarta 96* – £850 ovno. ☎ 01279 438097 or e-mail: val.lines@awl.co.uk

■ **PowerBook 500 series,** accessories, one new battery, one used battery, 19/200, internal modem, 12Mb upgrade, Targas backpacks, Kensington Deluxe briefcase. ☎ 0181 554 0421

■ **PowerBook 160 8/120** with internal Apple Express modem card and fax software – £450. PowerBook 170 8/80, active matrix screen – £450. Colour Classic 8/80 with Ethernet card, keyboard and mouse. Recently cleaned and serviced. Excellent value – £325. Stan ☎ 0171 251 8200 (work)

■ **Performa 400,** keyboard, mouse, boxed, all manuals, incl *ClarisWorks* and StyleWriter I printer – £500. E.Yorks ☎ 01482 864128

■ **PowerBook Duo 230, 8/80,** System 7.5.3, floppy drive, floppy adaptor, mouse, carry case, *ClarisWorks,* books and all in excellent condition, boxed – £400 ono. London, Matthew ☎ 0468 955443 (mobile) or 0118 923 8395

■ **Performa 630 CDTV 8/350,** 15-inch monitor, keyboard, mouse, manuals, eight multimedia CDs, excellent condition – £725. John ☎ 01625 426029

■ **Performa 6200,** 8Mb of RAM, 14-inch monitor, keyboard, mouse, 4x speed CD, CDs include: *3D Atlas, Myst, Multimedia Encyclopaedia, ClarisWorks, At Ease* – £900. ☎ 0181 747 1615

■ **16Mb 30-pin SIMMs –** £10 each. Andrew ☎ 01223 565910

■ **PowerBook 100 8/40 –** £350. StyleWriter II – £75. Chippenham ☎ 01249 750111

■ **Apple Multiscan 15-inch monitor,** new, un-used, boxed, all cables and software – £250. York, ☎ Tony 501904 423776 or e-mail: tony@ravewal.demon.co.uk

■ **Performa 400** (battery needed), 14-inch monitor, StyleWriter II printer, *After Dark,* CD-ROM 300E. All appropriate books and disks – £300. ☎ 01703 552508

■ **Performa 630 CDTV 20/350,** CPU only, mouse, manuals, System 7.5, *Photoshop, FreeHand 5,* lots of software plus StyleWriter 2400 colour printer – £675 ono. Alastair ☎ 0161 280 7243

■ **Mac LC 10/350,** 14-inch monitor, keyboard, mouse, System 7.5, 68030 upgrade card, external CD drive, excellent condition. Tony ☎ 01206 852113

■ **Performa 450, 10/120,** colour monitor, keyboard, mouse, StyleWriter II printer, CD-ROM complete with power speakers, warranty, software, manuals. Home use only – £600. ☎ 01203 417444

■ **Performa 450 12/120,** extra VRAM, 14-inch monitor, System 7.5.3, keyboard, mouse – £470 ono. "Reno" 2x speed portable CD drive – £50. Brian ☎ 01633 273359

■ **4Mb 72-pin SIMM** for 5200, 6200 etc – £15. Two 1Mb 30-pin SIMMs from Classic II – £15. ☎ 0171 278 3816 (afternoons except Wednesday)

■ **Radius Precision colour Pro 24X super-accelerated NuBus graphics card –** £200. NuBus Adaptor for Power Mac 6100 – £50. Colin ☎ 01734 581805

■ **LC475 8/80,** Apple 14-inch colour display, keyboard, mouse – £1,400. Chris ☎ 01530 244653 (eves, weekends)

■ **Mac Colour Classic 8/230,** 7.1, keyboard, mouse, VRAM upgrade, 16-bit colour screen, padded carry case, perfect condition – £690 ono. David ☎ 01222 664968

■ **Apple Duo Dock,** open to offers – will swap for Duo MiniDock. Steve ☎ 01342 843135 or e-mail: 72046.417@compuserve.com

■ **PowerMac 9500/200,** 128Mb RAM, 8x CD, extended keyboard – £3,500. Mitsubushi DiamondPro 17-inch monitor – £500. Two months old. Poverty forces sale! Croydon, Peter ☎ 0181 657 0322

Software for sale

■ ***Encyclopedia of Nature,*** Dorling Kindersley *Eyewitness* CD. New, unwrapped – £20. Susan ☎ 01446 793042

■ ***ClarisWorks 4.0,* boxed –** £35 ono. *Office 4.2,* boxed – £90 ono. *PowerPoint 3.0,* manuals – £35 ono. *Word 5.1,* manuals – £35 ono. *Excel 4.0,* manuals – £35 ono. *Norton Disklock 4.0* – £35 ono. ☎ 0191 482 3313

■ ***Wallobee Jack "The Tahi Sun Adventure"*** – ages four years and up – £10. (Works on PC and Mac). St Albans, Matt ☎ 01727 811125 (after 5pm)

■ ***Myst, Daedalus Encounter,*** *Way Things Work, 3D Atlas, Grolier Encyclopedia, ConcertWare, Makin Music* – £15 each or £90 the lot. Steve ☎ 01622 201323

■ ***TouchBase Pro* and *DateBook Pro,*** award winning personal organiser software, boxes, manuals, unregistered, immaculate condition – only £15. ☎ 01494 763774

■ ***Quantum Gate, Park Seed,*** *Iron Helix, Syndicate, Monkey Island II, Prince of Persia 2* and others – £15 each or swaps. Jim ☎ 01343 842283

■ ***Microsoft Office 4.2.1.*** CD, full version with all documentation (unregistered), bargain at £125. ☎ 0114 264 6535 (after 9 pm)

■ **Macromedia *xRes 2.0,*** full version (not crossgrade), unregistered, complete, worth £400+ – will sell for £200 ono. Will deliver. Matt ☎ 0117 908 7664

■ ***A-10 Attack* CD,** *Myst* (unopened), *Marathon* CD, *Kings Quest VII, Flashback, Kyrawdia, Lemmings* and *More Lemmings* – £15 each or swap eg. *Return to Zork, Rex Nebular.* ☎ 01868 725342

■ **Microsoft *Flight Simulator* –** £15, *Secrets of Monkey Island* – £10. May consider swaps. Edward ☎ 01228 576905

■ ***ChemOffice Pro 3.5,*** includes *ChemDraw 3.5, Chem 3D 3.5, ChemFinder 3,* boxed, un-opened, unregistered. Best offer. Mike ☎ 01245 496804 (eves)

■ **Adobe *Super Type Manager Deluxe 3.8.2* –** £30, *SuitCase 2.1.3* – £10, *ON* Utilities pack, containing *On Location, In Control, Superdisk* – all for £10. ☎ 01506 883772

■ ***Think C 5.0* disks,** manuals, complete – £60 including carriage and insurance. Would swap for modem or external CD-ROM drive. S Wales, ☎ John, 01633 864672

■ ***MS Office 4.2.1,*** boxed, unregistered, standard CD version, unwanted prize – £130. ☎ Peter 01732 882005

■ ***Microsoft Excel 5.0* –** £100, *Microsoft Word 6.0* – £100, *Microsoft Works 4.0* – £45. Un-used, unregistered with manuals. ☎ 01438 721328

■ **CD-ROMs:** *Return to Zork, Daedalus Encounter, Makin Music, Rednex, Rock Rap'n'Roll* – all £10 each, all as new. ☎ 01299 270076 (after 6pm)

■ ***Rebel Assault* –** £15 (CD), *A-Train* – £10 (two floppies). ☎ 01223 277281 (after 6pm)

■ ***Quark 3.32* –** £300 ono. Adobe *Photoshop 3.03* – £120. Adobe *Illustrator 6* – £120. All new, boxed, manuals etc. can re-register. ☎ 0171 700 6544

■ ***PC Exchange* –** £10. *ClarisWorks 2.1* (on CD) – £20. *Claris Organizer 1.0* – £15. *Just Grandma and Me* CD-ROM – £15. Dave ☎ 01376 344812

■ ***Secrets of Luxor*** CD-ROMs, boxed, as new – £30. Sue/Hiro ☎ 01373 864578

■ **Complete Internet starter kit** for Macintosh, fourth edition, including CD-ROM (*Adam Engst*) hardly used £15 plus postage. Sheila ☎ 0181 429 3746

■ ***DiskWorks,*** unregistered, unopened, integrated drive management software, 75% reduction – £40 inc. postage and packaging. Please leave your number on answerphone ☎ 01284 725609

■ ***Marathon,*** boxed, as new – £15. Rob ☎ 01454 727497

■ ***FreeHand 5.5*** (CD) – £150. *SoftWindows 2.0* (CD) – £100. *Photoshop 3.0* (CD) – £120. ☎ 01249 750111

■ ***Redshift* 1,** *Distant Suns 2.0* – £18 each. *ADAM: The Inside Story 1* – £15. TCP/Connect II (remote) Internet suite – £50 ono. Whole Intranet Users Guide and Catalog, *Ed Krol* (500 pages, softback) – £12. CD Auto-Cache (SpeedUp utility) – £20. Steve ☎ 0171 238 4006 (day) or 01732 740521 (eves)

■ ***Symantec GreatWorks 2.0*** – £20. *The Residents Gingerbread Man* CD-ROM, boxed – £8. *Nisus Writer 4.06,* original disks, manuals, registration certificate – £50. *Claris Organizer,* including upgrade to 1.0 version 2 in original, sealed packaging – £25. *WorldTour Golf* CD-ROM – £10. ☎ 01661 843315

■ **Games for sale or swap** – including *Abuse, Dark Eye, Indy's DeskTop Adventures* and more. Andy ☎ 0151 728 8688

■ ***Strata Vision 3D version 4* –** £140. *Infini-D 3* – £180. PowerPC/Mac. Both boxed, unopened, unregistered. Also *Daedalus Encounter* – £9. ☎ 01276 62780 (after 6pm)

■ **MacroMedia *Extreme 3D,*** unwanted prize, un-opened – £200. *PageMaker 4.2* with manuals – £25. ☎ 0171 278 3816 (afternoons except Weds)

■ **Pantone *ColorDrive,*** still shrink-wrapped – only £90. Unwanted prize, includes *ColorWeb.* ☎ 0181 287 3491

Wanted

■ ***ClarisWorks 4,*** Grammar Check software, *PGA Golf Links Pro, After Dark.* Please write to: Andy Hince, 7a Church Lane, Doddington March, Cambs PE15 0TA

■ **Memory for original Mac Portable** (non-backlit) 3 or 4Mb board. Mike ☎ 0117 908 2158 or e-mail: mfisher@bris.ac.uk

■ **Apple external floppy drive,** also adaptor, MiniDock wanted for PowerBook duo. Will consider Duo Dock. ☎ 0181 548 0403

■ **Computer related pin badges** wanted. Please phone Kyle Alexander on ☎ 01252 24207. Thanks!

■ **ImageWriter II.** David ☎ 01236 738808

■ **Issue one of T3** wanted. ☎ 01443 203902

■ **Adobe *Photo Deluxe*** and *Aldus FreeHand v4.0.* Roger ☎ 01702 46881

■ ***Myst* Strategy/Hint book.** Colin ☎ 01342 715434

■ ***Day of the Tentacle.*** Edward ☎ 01228 576905 (after 5pm)

■ **Beginner seeks original programs** to run on LCII. *MacDraw, MacPaint, MacCheese* etc. ☎ 0171 733 5915

■ **Centris 610 NuBus graphics card** and adaptor. ☎ 01608 644230 (eves)

■ ***Warcraft Orcs* and *Humans,*** also ten intelligent strategy games. Robert ☎ 01438 365138

■ ***Links Pro* courses.** Belfry, Riviera and Castle Pines especially. Cash paid. ☎ 0181 386 8932 (after 7pm)

■ **Apple external floppy drive** for PowerBook 100, also manuals for same, System 7.0 or System 7.1. All reasonable prices paid. Henry ☎ 017 923 9929

■ **Colour monitor –** anything considered. SVGA adaptor so PC monitors can run with Mac. ☎ 01343 842283

■ **Copy of Sid Meier's *Civilization.*** Possible swap for *Dark Forces* CD – boxed. ☎ 01224 482770

■ ***SoftWindows* for Macintosh** (68K version not PowerMac). Will buy or swap. Simon ☎ 01704 550221 or e-mail: simon@lightbox.demon.co.uk

■ **4Mb 72-pin SIMM –** £15, also AV card for 6100/60 needed. Dennis ☎ 01273 683340

■ **Syquest EZ Flyer 230Mb.** ☎ 01698 267457

■ ***SoftWindows* for 68K Mac.** Staffs, Paul ☎ 01785 816922, fax 01785 811375, e-mail 106502.1267@compuserve.com

■ **Colour scanner –** up to £150. ☎ 01332 720196

■ ***Microsoft Office*** or *PowerPoint* CD-ROM or on disk, *Decent Marathon 2, XWing, Freehand 5.x, Persuasion, Infini-D.* Must be cheap and PPC. Ian ☎ 01253 352848

■ **Back issues of MACFORMAT** including CD-ROM. Prefer collection Numbers 1-36 (or numbers 1-29). Also interested in The Mac. Must be in mint condition. USA, Da-jie ☎ from UK, 00 1 (510) 526 9540

■ ***Photoshop Deluxe*** and *Kai's Power Goo.* ☎ 01506 883772

Swap shop

■ **Performa 630 CD 8/500** + £'s for PowerPC – any considered. ☎ 01332 720196

■ **External CD-ROM** wanted for Performa 475, swap for *Director 5.0* or *QuarkXPress 3.3* or pay reasonable price. London, Paul ☎ 0181 965 8105

■ ***Sim City 2000*** (disk) swap for *A10 Cuba.* Ely, Cambs, Jonathan ☎ 01355 669708 or e-mail: jonathan@wfenrd.demon.co.uk

■ **Performa,** 15-inch monitor, exchange for StyleWriter 2500 colour printer. Must collect. MessagePad too. ☎ 0181 470 7025 (eves)

■ ***Microsoft Office v 4.2,*** 3.5-inch disks, will swap for *SoftWindows* for PowerMac, prefer 95, but 3.0 will do. Chris ☎ 01630 655 or e-mail: beckshols@enterprise.net

Books and magazines

■ **The Mac magazine,** issues 1-30 with CDs – £45. ☎ 01946 822015

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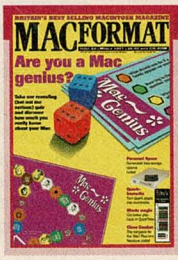

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Winners

Announcing the lucky winners of recent competitions...

Back in MACFORMAT 45, the prize on offer was a superb Umax Vista S-12 scanner, worth over £930, courtesy of IMC Distribution. The S-12 is a single-pass A4 colour scanner with an impressive optical resolution of 600 x 1,200 dpi and comes with a whole bundle of useful software. The lucky winner of a Umax S-12 is John Lowell of Newquay. Congratulations!

The Umax Vista S-12 colour flatbed scanner comes with software for colour correction, batch scanning and even Optical Character Recognition.

Also in MACFORMAT 45, we gave you the chance to win every current Mac title from Grolier Interactive – 11 superb titles including *Grolier Multimedia Encyclopedia, Guinness Disc of Records, Encyclopedia of Sci-Fi, Circus* and *20th Century Art* – plus every Grolier Mac title released till the end of the century. The winner is Mr V Hatch of Southall, Middlesex. Well done! **MF**

Bright ideas – the Tiny Zone!

Hello and welcome again to Tiny Zone, the section of MACFORMAT that fits in this space as snugly as a floppy in its drive. Funny how you begin to appreciate what you've got only when you think you might be losing it – even something as simple as the auto-eject floppy disk drive. There were rumours this month that Apple was abandoning this brilliant device, since the forthcoming PowerPC Platform isn't going to use it anyway. For our money, it is one of Apple's unsung technological wonders, even if some drives for no apparent reason spit disks out at speeds high enough to disembowel you if you stand too close. Okay, it may not rank up there with the Mac OS itself, or the telephone or the television, but what does? No, that's not a rhetorical question. Yes, there's a prize on offer for the best list of The Seven Technological Wonders of the Modern World. Send your entry, with brief reasons why you think each item should qualify for inclusion, to "The Competition Nobody Finds" at the editorial address on this page.

How to contact MACFORMAT

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AOL: MACFORMAT also has its own area within AOL in the UK – go to keyword **MacFormat**

Sending us a letter?

Send your letters to the address above – the shorter they are, the better their chances of being printed. E-mail letters are welcome too – please put "Apple Talk" in the subject line. If you'd like a letter included in the Readers' Corner on our Cover CD-ROM, make sure it contains no defamation or obscenity, then send it in as a *SimpleText* document (so anyone can read it!) on a disk marked "MACFORMAT Readers' Corner". Make sure you include your name and address, and note that we can't return your disk.

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Problems or questions?

■ Sorry, but we cannot give personal help with technical problems or buying advice, whether by phone, fax or e-mail. If you have an urgent problem with a new Mac, try the Apple Assistance Centre on 01753 615999.

■ We try to make ourselves available to answer Cover Disc related and general reader calls on Wednesday afternoons from 2pm to 6pm, so please ring then if you have to. We cannot answer technical queries over the phone – sorry! We hope you'll understand that because we receive so much correspondence we can't promise to reply to faxes, e-mail or mail personally, even if you include an SAE. However, rest assured that we do read all correspondence we receive.

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Helen Watkins on 01225 442244

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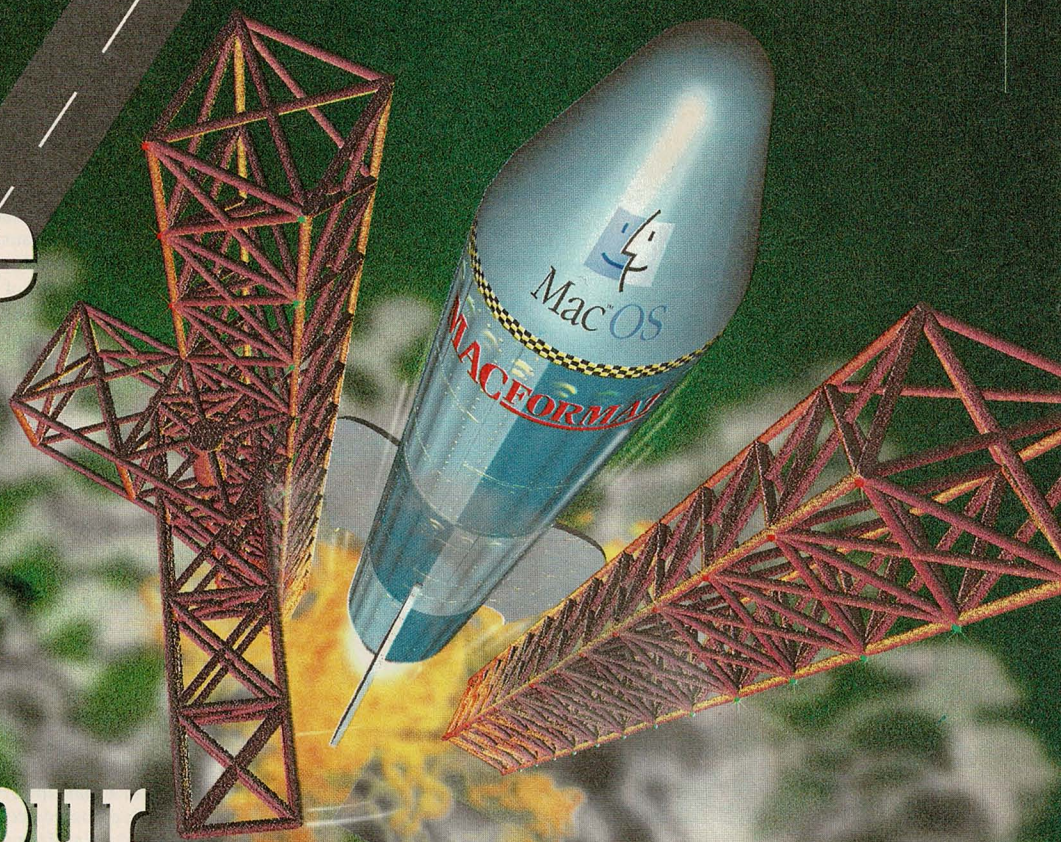
Mac and Tosh

by Bob Lynch

What's that thing on your face, Tosh?
These are my VR Spex, Mac.
It enables me to view and experience landscapes and structures that exist only inside your circuits.
Would you like me to knock up an experience for you then?
Oh, yes please!
Here we go.
Wow, it's like I'm in a small room talking to a computer!

Next issue



Take your Mac into the future

Feeling left behind by all those powerful new Macs? Give your old Mac a new lease of life by upgrading it! We explain the options for *your* model and show you how to boost its RAM, speed and power!

Plus...

- Do you really need a RAM-hungry DTP program for simple posters, flyers and the like? We test two new "home DTP" packages with ready-to-use templates, clip art and more. Could Brøderbund's *Print Artist* or Corel's *Print House* do all you need?
- Alps' new MD-4000 combines a printer and scanner in one – a great idea if you're short of desk space, but how does it perform?
- *Spreadsheet 2000* – a new version of the innovative, graphical *Let's Keep It Simple Spreadsheet*, which earned a MACFORMAT Classic Award. Is the upgrade better than *Excel?*
- The latest games, music multimedia and kids' CD-ROMs put to the test.
- More tips for getting the best from *ClarisWorks* and *FileMaker Pro 3.*
- The leading Mac buyer's guide, free reader ads and much, much more!

MACFORMAT 52 goes on sale on Friday 6 June. Reserve your copy with your newsagent now, or turn to page 115 for our special subscription offers!

Win a ONE Tech 2.6Gb optical drive!

Fed up with floppies? Banish them forever with a ONE Technologies 2.6Gb magneto-optical drive, worth £1,140, courtesy of Disc Direct. Plus three font collections for runners-up.

Backing up your Mac's hard drive is one of the most basic and crucial things you can do to protect your data. Backing up a hard disk onto floppy disks is a time-consuming and tedious process, especially since today's Macs come with hard disks of over a gigabyte in capacity. To back up 1Gb of data, you'll need around 750 floppy disks and a lot of patience. Or you could do it in less than half an hour and on one magneto-optical disk that will last for over 50 years. Sound too good to be true?

Not any more. We've got a ONE Technologies 2.6Gb MO drive, worth over £1,000, to be won, courtesy of Disc Direct. Three lucky runners-up will win a *Serials Design Type Collection* CD, also from Disc Direct. Worth over £130, the *Serials Design Type Collection* is packed with 1,000 PostScript and TrueType fonts to liven up your documents.

We review the ONE Technologies 2.6Gb MO drive this issue (see page 77). It's based on a MaxOptix mechanism with a quoted access time of 34ms and a transfer rate of 4.7Mb a second, and it takes 5.25-inch cartridges. What's more, it not only reads and writes to 2.6Gb cartridges, but also to the older 600Mb, 650Mb, 1.2Gb, 1.3Gb and 2.3Gb 5.25-inch carts. So, if you already have some of these, your data is still accessible!

The ONE 2.6Gb drive comes in a heavy steel casing designed to protect the drive from the knocks of life. The drive comes with a 50-pin-to-25-pin SCSI cable to connect it to your Mac, a SCSI chain terminator, power lead and driver software. The software not only covers the optical drive, but all types of drives (except CD-ROM), so you can update the driver on your internal hard disk and any external devices you already have, for increased performance. Not only that, but the Extension provided as part of the software will seek out removable drives connected to your Mac at startup, and automatically load a driver for them.

For three runners-up Disc Direct is giving away the *Serials Design Type Collection* CD, worth over £130. No matter what style of font you need, you're sure to find something to suit in this exceptional collection of 1,000 faces, from elegant body text fonts to stylish decorative fonts.

All you have to do is answer the three simple questions below and send us your answers by mail or phone – see the "How to enter" box for details. The closing date is 20 June 1997.

The questions

1. What does MO stand for?
(a) Mechanical Operation
(b) Magneto-Optical
(c) Modus Operandi

2. Which of the following cartridges will the ONE Tech 2.6Gb MO drive *not* read?
(a) 2.6Gb
(b) 600Mb
(c) 12-bore shotgun

3. How many fonts are included on the *Serials Design Type Collection* CD?
(a) 100
(b) 130
(c) 1,000

The rules

1. You must send us your entry by midnight on Friday 20 June 1997.
2. Employees of Disc Direct, Future Publishing and associated companies or their agents, and their families, may not enter.
3. Multiple entries are not allowed.
4. The editor's decision is final, no correspondence will be entered into and there are no cash alternatives. No purchase is necessary. **MF**

How to enter

1. Post the coupon at left (or a photocopy) to: Disc Direct Competition, MACFORMAT, PO Box 494, Coventry CV3 1YT

2. Alternatively, dial the MACFORMAT Disc Direct Competition Hotline:

0891 553340

(The lines are open 24 hours a day, and your call should take no longer than three minutes. Calls are charged at 50p per minute at all times. You will get the opportunity to opt out from having your name included on a mailing list.)

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3 (circle one) (a) (b) (c)

To help us improve MACFORMAT, please answer the questions below. You will be entered in the competition even if you choose not to answer them.

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